ESTABLISHED IN 1872

PAPER TRADE JOURNAL

PAPER

SIXTY-FOURTH YEAR

PAPER

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with PAPER TRADE JOURNAL.

Vol. CI, No. 5 Thursday, August 1, 1935

Established Sept. 21, 1910
Consolidated Feb. 19, 1925
with PAPER TRADE JOURNAL.

Technical Program For Fall Meeting of TAPPI

G. E. Landt, Chairman of the Program Committee Announces Two Interesting Symposia, "Cellulose Fibers from the Standpoint of Paper and Pulp Manufacture," and "Principle Governing the Formation of a Sheet of Paper," for the Fall Convention To Be Held at Atlantic City, N. J., September 19-21

G. E. Landt, chairman of the Program Committee, has announced the following as the program for the fall meeting of the Technical Association of the Pulp and Paper Industry to be held at the Ambassador Hotel, Atlantic City, N. J., September 18 to 21, 1935.

THURSDAY, SEPTEMBER 19, 1935

The Cellulose Fiber from the Standpoint of Paper and Pulp Manufacture.

1. The Morphology of the Cellulose Fiber by Dr. G. J. Ritter, Forest Products Laboratory, Madison, Wis. (This paper covers the principles of fiber growth and structure of the more usual paper making fibers, especially as related to problems of paper and pulp manufacture.

2. The Colloidal Aspects of the Cellulose Fiber, by Dr. B. W. Rowland, Institute of Paper Chemistry, Appleton, Wis. (Reviewing the characteristics and behavior of the fiber from a colloidal point of view.)

3. Pulping Treatment and Fiber Properties, by Dr. G. A. Richter, Brown Company, Berlin, N. H. (The chemical aspects of pulping as affecting fiber properties. To develop the basic chemical factors of pulp and pulping treatment as affecting fiber and paper properties.)

FRIDAY, SEPTEMBER 20, 1935

The Principle Governing the Formation of a Sheet of Paper.

1. Mechanical Treatment of Fibers as Affecting Sheet Structure, by R. H. Doughty, Fitchburg Paper Company, Fitchburg, Mass.

2. Principles Governing the Arrangement of Fibers on the Fourdrinier Wire, by A. M. Lund, Mazer Paper Mills, Lansdowne, Pa.

Discussion

A. From point of view of Rag Paper
B. From point of view of Sulphite Paper
C. From point of view of Kraft Paper
D. From point of view of Groundwood Paper

3. For Formation of Cellulose Membranes, by Wanda K. Farr, Boyce-Thompson Institute, Yonkers, N. Y.

SATURDAY, SEPTEMBER 21, 1935

1. Drying of Pulp and Paper II "Effects of the Principal Variables on the Rate of Air Drying; Mechanism of Drying of Pulp Sheets by D. W. McCready, University of Michigan, Ann Arbor, Mich.

2. Tolerance in White Water Losses, by C. M. Baker, American Paper and Pulp Association, Madison, Wis.

3. Color Analysis & Specification, by Joseph Razek, University of Pennsylvania, Philadelphia, Pa.

4. Effect of Temperature and Consistency in Mechanical Pulping, by E. R. Schafter and J. C. Pew, Forest Products Laboratory, Madison, Wis.

More than 250 reservations for rooms at the Ambassador Hotel have been received. Now is the time to make a reservation in order to obtain an excellent hotel room assignment. It is not necessary to be a member of TAPPI to attend the fall meeting.

Crown Willamette Makes Good Report

Report of Crown Willamette Paper Company and subsidiaries, including Pacific Mills, Ltd., for fiscal year ended April 30, 1935, certified by independent auditors, shows consolidated net profit of $1,467,615 after depreciation, depletion, interest, federal taxes and minority interest, equivalent to $7.33 a share on 200,000 shares of $7 first preferred stock. This compares with $1,129,680 or $5.65 a share on $7 preferred stock in preceding year. All the common stock is owned by Crown Zellerbach Corporation. Arrears on the first preferred stock amounted to $11 a share as of April 30, 1935, and $24 a share on second preferred stock.

Current assets as of April 30, 1935, including $3,508,016 cash and government securities, amounted to $11,820,153 and current liabilities were $3,861,719 compared with cash and government securities of $3,535,422, current assets of $10,813,892 and current liabilities of $2,683,870 at end of preceding fiscal year.

Consolidated income account for year ended April 30, 1935, compares as follows:

	1935	1934	1933
Operating profit	$5,630,566	$5,283,235	$3,714,217
Depreciation	2,295,697	2,287,888	2,210,459
Depletion	485,263	490,501	316,196
Interest	1,073,459	1,112,763	1,200,364
Federal income tax	281,159	238,585	29,537
Minority interest	27,373	23,818	*4,726
Net profit	$1,467,615	$1,129,680	†$37,613

* Credit. † Loss.

Kimberly-Clark Corp's Earnings Increase

Surplus for Common Stock for First Half of Year Amounts to $267,827, or 55 Cents Per Share —Compares With Deficit of $48,658, After Preferred Dividends, In Corresponding Period of Last Year—Sales for Second Quarter This Year Totalled $4,959,000, Against $5,023,000 In First Quarter

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 29, 1935—Increased earnings the second quarter of 1935 despite smaller sales brought the surplus for common stock of the Kimberly-Clark Corporation, Neenah, Wis., for the first half of this year to $267,827, or 55 cents a share. This compares with a deficit of $48,658 after preferred dividends in the corresponding 1934 period.

The company, in the second quarter of 1935, had surplus available for common stock of $146,708, equal to 31 cents a share. This compared with $121,118, or 24 cents a share, the previous quarter, and $38,171, or 7 cents a share, the second quarter of 1934. Sales of the second quarter this year totalled $4,959,000, against $5,023,000 the preceding quarter.

Cellulose Wrapping Tests

Use of cellulose or aluminum foil instead of parchment for butter wrappers may become a more general practice, according to the results of a study conducted for the last two years by the Department of Dairy Industry at the University of Wisconsin, Madison, Wis. Parchment wrapping usually requires an outer carton, but use of the cellulose or tin foil will obviate this necessity, it is found.

Tests showed that butter wrapped in cellulose had a shrinkage of only 88/1,000 per cent, and that the surface flavor was unimpaired, with no foreign odors or tastes when the butter was kept in a dark room. The cellulose wrapper, being air-tight, makes an outer carton unnecessary and lessens the packing and shipping costs. Its transparency will add to the appearance of the package, it is stated, and will serve as a merchandising aid, unless it is found necessary to use a tinted wrapper to prevent possible light damage.

Aluminum foil covered with a special coating has been found successful from the standpoint of low shrinkage, and protection from light damage. The general acceptance of cheese in this wrapping, it is said, will make it equally popular for butter.

Tomahawk Dam Sale Considered

Sale of the former Tomahawk Pulp and Paper Company dam at Tomahawk, Wis., to the Wisconsin Public Service Corporation is under consideration by the Wisconsin Public Service Commission, following a hearing at Madison, Wis., last week. The dam is now owned by the Tomahawk Hydro-Electric Company, which was deprived of operating rights because the dam was not kept in repair. The utility company offered to purchase it about six months ago for $8,000, make immediate repairs, and enlarge the gates to take care of flood waters. Decision was delayed pending the signing of petitions by residents of the Tomahawk area for a referendum to decide whether the dam should become public property as part of a power district. About 1,000 signatures had been secured, but the commission refused to grant further extensions of time. A. G. Carson, of Green Bay, Wis., chief engineer of the utility company, appeared on its behalf, pointing out the damage that would result if the dam gave way in its present condition.

The Wisconsin Legislature is still undecided whether to give the Wisconsin Valley Improvement Company of Wausau, Wis., authority by law to construct a system of dams and reservoirs on the Wisconsin river and its tributaries. Amendments have been proposed setting various time limits during which the company may acquire the lands to be flooded. A vote is expected this week, so the company can proceed further with its $15,000,000 program of storage reservoirs and a hydro-electric dam at Knowlton, Wis., for the Consolidated Water Power and Paper Company.

Engineers Convene at Appleton

Paper mills were liberally represented at the annual convention of the Wisconsin unit of the National Association of Power Engineers at Appleton, Wis. July 20 and 21. The city was chosen because it is the location of the first hydro-electric plant in the world. L. B. Powers, engineer of the Kimberly-Clark Corporation, Neenah, Wis., was general chairman, and was elected vice-president. He gave the address of welcome to the 400 engineers attending. Martin O'Neill of Madison, Wis., was elected president.

News of the Industry

The Consolidated Water Power and Paper Company's second raft of pulpwood towed across Lake Superior this season arrived at the rail loading port at Ashland, Wis. last week. It contained 7,000 cords, brought from Nipigon Straits, Canada. A third raft will be brought from that point within the next ten days by the company's Newaygo Tug Line. A cargo of pulp also arrived last week at Menominee, Mich., from Nipigon, Canada, aboard the diesel-engined freighter *Redfern*. It will be distributed by rail to Michigan and Wisconsin mills.

All five directors of the Consolidated Water Power and Paper Company were re-elected at the annual meeting of the company's stockholders at Wisconsin Rapids, Wis., last week. They are George W. Mead, Stanton W. Mead, Walter Mead, Theodore W. Brazeau, and E. B. Redford. The election of officers is to be held later. Annual reports were presented showing a satisfactory year and a favorable outlook. The stockholders were taken on a tour of the Wisconsin Rapids mill.

Robert B. Goodman, of Marinette, Wis., capitalist interested in several paper mills and in extensive timber operations, has been appointed chairman of the Wisconsin Conservation Commission. He was appointed to the commission in 1931, and was chairman until a year ago. He was reelected to the chairmanship following the resignation of Adjt. Gen. Ralph M. Immell, who is public works administrator for Wisconsin. Mr. Goodman has been the leading exponent of reforestation in Wisconsin.

The Gilbert-Nash Company, of Menasha, Wis., manufacturers of patented paper making articles, is the plaintiff in action in the circuit court at Oshkosh, Wis., to alter the trust agreement of the late George D. Barnes, who was general manager of the company until his death

in 1933. The company asks that the money to be distributed under a trust fund of $156,000 be held for nine beneficiaries and the plaintiff company, which is not a beneficiary. The court is to determine how much, if any, of the trust estate is forthcoming to the plaintiff company, it being alleged the company funds paid for maintaining insurance policies held by Mr. Barnes. The defendants are the First Trust Company, Oshkosh, Wis., and R. J. Fieweger, Menasha, Wis., who are the trustees, and eight members of the Barnes family who are beneficiaries.

Numerous picnics are being held among paper mill employees. The workers of the Gilbert Paper Company, Menasha, Wis., gathered for their annual outing at the Menasha park last Saturday. Employees of the Menasha Products Division of the Marathon Paper Mills Company at Menasha will have their picnic August 3. The locals of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers at Kaukauna, Wis., will have their annual picnic Labor Day.

Sixteen first year students have been enrolled at the Lawrence Institute of Paper Chemistry, Appleton, Wis., for the fall semester. All are graduates of colleges or universities, and seven have had actual paper mill experience. They come from eleven states. The Institute is planning a two weeks' course in wood study at a northern Michigan lumber camp previous to the opening of the school term.

The Institute was visited recently by the executive committee of the American Pulp and Paper Association while they were guests at the country estate of F. J. Sensenbrenner of Neenah, Wis., president of the Kimberly-Clark Corporation, and of the association. Those included in the party were: Ernst Mahler, vice-president of Kimberly-Clark Corporation; J. H. Riegel, of Riegel Paper Corporation, New York; Cole Parker of New York, of the association's legal staff; A. B. Lowenstein, of the Crown-Zellerbach Paper Company; D. Clark Everest, of the Marathon Paper Mills Company; Norman Wilson, Hammermill Paper Corporation, and Charles Boyce, New York, executive secretary of the association.

Another recent Institute visitor was E. H. Dadswell, of the Forest Products Council of Scientific and Industrial Research, Melbourne, Australia. He is visiting a number of mills in United States and Canada.

F. Howard Richmond Dead

The death of F. Howard Richmond, of Appleton, Wis., occurred July 19, at Stevens Point, Wis., while he was visiting his son, Howard B. Richmond, assistant manager of the Stevens Point mill of the Consolidated Water Power and Paper Company. He was 76 years old.

Mr. Richmond was a son of the founder of the Richmond mill in 1857, one of the oldest in Wisconsin. He had been associated with various mills all his life until his retirement seven years ago. Funeral services were held at Appleton, and burial took place there.

National Paper Products Struck by Lightning

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., July 29, 1935—During a severe electrical storm this week two large transformers at the National Paper Products Co. were struck by lightning and one was completely destroyed. Both transformers were cut out of service but the mill was supplied constantly with service.

The plant is supplied with an emergency supply of current generated by a steam turbine at the plant and operations were not impeded.

Whiting-Plover Co. Makes Improvements

STEVENS POINT, Wis., July 29, 1935—A $150,000 program of improvements is being carried out at the plant of the Whiting-Plover Paper Company, just south of Stevens Point.

New machinery and equipment are being installed which will effect drastic changes in manufacturing processes. The improvements will not only increase rate of production and lower costs, but will also result in marked improvements in qualities and characteristics of the finished paper. To provide for the new machinery and equipment, buildings in several departments are being remodeled.

Manufacturing schedules have been so arranged that all of the work possible may be done by the company's own employes during the present slack period. Other repair work, painting, clean-up jobs, etc., are also being done at the present time to make more work for regular employes.

It is expected that all of the new work will be completed about September 1 and an extensive sales promotion and advertising campaign will be started shortly thereafter to bring the new facilities and advantages to the attention of the trade.

The Whiting-Plover Paper company is not only an important factor in the economic life of Stevens Point, but has done much to advertise the city throughout the country. Its high grade papers, featuring Artesian bond and other mill brands, have national distribution and the company for many years has occupied a most favorable position in the industry. A factor of prime importance in establishing its reputation for quality products has been its spring system, developed in the basin of the Plover river. This water, the same in quality as is supplied by Stevens Point's municipal water utility from a different location in the Plover basin, is extensively used in the paper manufacturing processes and has made possible practically perfect color and uniformity.

With the completion of the improvement program now under way, the Whiting-Plover Paper Company will be in stronger competitive position than ever before from the point of view of quality, cost and production.

American Writing Shows Gain

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., July 30, 1935—According to a financial statement recently issued the American Writing Paper Company, Inc., shows a decided improvement in orders received. For the first six months this year the net loss was but $126,015 as compared with $269,774 for the corresponding period a year ago. According to Sidney L. Willson, President of the company, business increased about 20 per cent over the same period a year ago. The securing of a number of orders for government paper was a factor in the better showing Mr. Willson said.

Graphs maintained by the Company indicate an upward trend of business for the first six months which is continuing. Present indications are for the best showing this year by the company for several years.

Robert Gair Co. Makes Good Report

The Robert Gair Company reports as follows for the second quarter ended June 30:

Profit was $285,508 after provision for depreciation, interest on bonds of subsidiary company, dividend on preferred stock of subsidiary and other charges, but before interest on income notes and income taxes of approximately $78,000. This compares with profit of $281,452 after same allowances in preceding quarter.

Outlook for Container Corp. of America Bright

Demand for Paper Board Remarkably Well Sustained During June and July—President Walter P. Paepcke Anticipates Even Greater Volume of Business During Following Three Months—Urges Protests Against Pending Tax Legislation

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 29, 1935—Sales volume of the Container Corporation of America has held up remarkably well during June and thus far in July according to a statement issued on July 19 by Walter P. Paepcke, president of the Chicago concern. Mr. Paepcke also expressed the belief that even better volume will be available for the industry in August, September and October and that "barring unforeseen conditions the outlook for the second half is reasonably good." The Container Corporation also calls the attention of stockholders to pending tax legislation in Congress and points out that if the proposed higher graduated corporate taxes are enacted the federal income tax of the Corporation will be substantially higher. Protests to Congressmen against the tax proposal are urged.

Consolidated net earnings of Container for the first six months of 1935 amounted to $432,145, comparing with $598,858 for the first half of 1934. Earnings amounted to 60 cents on the Class A and to 30 cents on the Class B stock and some preferred dividend arrears were paid as of April 1, 1935. Tonnage volume showed an increase of 17.4 per cent as compared to the first half of 1934 and sales dollar volume was boosted 5.2 per cent. Average selling price declined almost $6.00 a ton compared with the like period in 1934 and at last year's prices the same tons would have brought a greater sales dollar realization of over one million dollars.

Nation Wide Papers

The directors of Nation Wide Papers, Inc., the new co-operative group of thirty paper concerns, met in Chicago last week, although no statements have been made available relative to their plans for the future. It is possible that no statement will be announced for sixty days inasmuch as George Frazer, Chicago accountant and attorney who made the initial announcement, has expressed a desire to have the entire program made ready and the organization completed in every detail before the set-up is completely described to the industry. Directors meeting in Chicago included R. S. Bull, Bradner, Smith & Co.; A. W. Leslie, John Leslie Paper Company, Minneapolis; K. W. Carpenter, Jr., Carpenter Paper Company, Omaha and C. A. Esty, Carter-Rice & Co., Boston. The personnel of the directorate clearly bears out the statement made by Mr. Frazer that the organization is to be made up of paper jobbers in non-competitive marketing areas.

Paper Quotations Firm

The Chicago paper market offered little in the way of excitement during the past week. Markets were uniformly firm despite rumours that resale outlets for certain lines such as grocers were beginning to cut prices below the NRA figure. This is not expected to have any appreciable effect on the coarse paper market. As far as the entire market is concerned it is not giving as good account of itself as during the Spring quarter. Summer dullness is quite noticeable though there is a fundamental strength in the markets that indicates a real basis for further upturn in the Fall. The industry itself, at least in this locality, has given a good account of itself in finding new uses for paper and, in general, in doing some effective merchandising of new grades and new lines. There is plenty of evidence that improved buying power has caused buyers to invade the higher grades of paper where there is the semblance of an opportunity for profit.

Bonds and ledgers remained very firm with demand noticeably off as the vacation season reached its height. Specialties directed toward the vacation trade had a fair demand. Books and covers showed little disposition to change and the market was firm despite some slackening in demand. Groundwoods were practically unchanged. Newsprint conditions remained little altered. The paper board market showed a slight broadening out of demand. There was nothing to report in the waste paper market, with old news showing the least signs of life locally.

Golf Outing Prize Winners

Most of the sixty-five paper salesmen and guests present at the third monthly golf outing of the Salesmen's Association of the Paper Industry, Mid-West Division, grabbed a share of the long list of prizes. The event was held at Bob-O-Link and included luncheon, golf and dinner.

Following are the prize winners as received from Ben Babbitt, of the Brown Company, golf chairman: low gross, Courtney Reeves; low net (17 handicap and under) Carr Sherman; low net (18 and over), Les Ferris; low net, first nine, Jim Coy; low net, second nine, Gregg Frelinger; low putts, Bob Whitelaw; low putts, first nine, Harry Todd; low putts, second nine, Hank Fulton; low putts foresome, Henry Law, Bob Whitelaw, Clarence Foster and Lin Lake.

The low net foursome was composed of George Ross, Hank Fulton, Les Ferris and Tom Donahue, while the high putt foursome was made up of Rube Swan, Jack Allen, Duke Fortney and Doc Moeller. High gross foursome honors went to Ira Meyers, Harry Nott, Paul Joslin and Jim Coy. Other prize winners were: low gross, par three holes, A. J. Austin; low gross, par five holes, Duke Fortney; high gross, Harry Nott; high net, Eddie Schmidt and blind bogey, Doc Moeller.

The next outing will be held at the Knollwood Country Club on August 16 while the final outing will be held at the time of the National Paper Trade Association meetings in Chicago early in October.

News of the Trade

The Fick Paper Company, 323 West Polk street, Chicago, is rapidly expanding its sales force to take care of increased demand. It is reported that three new salesmen are to be added during the summer months. The company has also announced a new bond paper—"Fipaco"—described as "a super bond" and which is proving popular in this territory.

A service to the printing industry has been devised by the James White Paper Company in the form of a new sample book which permits the printer to carry a complete line of paper samples direct to the customer. The sample book contains the "every day grades" including rag

content covers; bleached sulphite stock and 25 per cent unbleached sulphite cover stock.

Recession in the paper industry, mild in character but indicative of early summer retrenchment is indicated in the current report on business conditions issued by the seventh federal reserve district including the States of Illinois, Indiana, Iowa, Wisconsin, Michigan. For the week of June 15, 1935 the 497 reporting firms in the paper and printing group showed 58,204 wage earners with earnings of $1,402,000. The number of wage earners declined 1.7 per cent as compared with the week of May 15 while the earnings figure declined 1.4 per cent during the same period. This compares with the averages for the ten divisions in the manufacturing group which shows a 2.9 decline in wage earners and a 5.9 decline in earnings for the same periods.

James H. Coy, vice president and Chicago sales executive of the Flambeau Paper Company, has been laid up during the past week due to an infection in his foot. Reports from Conway building headquarters indicate that the infection started with an insect bite and that the doctor has ordered a few days rest to quiet the infection.

Indiana Paper Industry Less Active

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., July 29, 1935—The vacation period and general dullness due mostly to extremely hot weather have had their effect on the paper industry in this territory. In most lines there has been less activity but for the most part prices have been well held. However, there is a strong undertone to the market insofar as demand is concerned, as evidenced by the inquiries that are being received. The demand recession at this season was not unexpected, the surprise being that it was delayed as long as it has been. The first half of this month was entirely satisfactory, according to local manufacturers and dealers.

Box manufacturers say there is some demand, but volume has fallen off during hot weather. Inquiries are coming from the hardware, automobile accessory and textile trades, however, and there are indications of an early resumption of business this fall. The common paper demand is holding up fairly well. Bags also are apparently well situated.

Due to seasonal conditions, the demand for newsprint is not as heavy as it was, but lineage is better than it was this time a year ago and the publishers for the most part are well satisfied with the business trend. Some uncertainty is evinced in the price field and publishers are buying carefully for future needs.

The bright spot has been in the summer specialty field. Slow to begin this year because of the absence of spring, demand bounded and has remained at a high level since the first really warm days. All items are moving nicely and if the demand continues through the remainder of the hot weather period, the volume this year will be comparable with that of last year.

While demand for building papers has slowed somewhat with hot weather, the volume is so far ahead of last year there are few complaints.

Paper stock men say there are some mill inquiries, but on the whole the mill demand is not what it should be. Prices are very low and most of the activity is in the better grades of rags and papers.

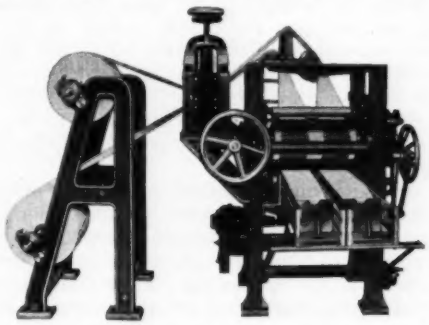
Ideal Paper Supply Chartered

WORCESTER, Mass., July 29, 1935—Ideal Paper Supply Inc., has been incorporated with capital stock of 500 shares of no par value. Incorporators are Eugene Friedman. Joseph R. Shapiro and Marga B. Rivers.

Beltless Napkin Folder

An illustration is presented herewith of the new Beltless Napkin Folder recently announced by the Paper Converting Machine Company, Green Bay, Wis., manufacturers of napkin folders and paper converting machines of all types.

In this machine all belts have been entirely eliminated, but the efficiency and speed have been increased. The elimination of the belts furnish an opportunity to speed up the machine from 100 to 150 more napkins per minute. While this is an entirely new machine, it has been proven



NEW BELTLESS NAPKIN FOLDER

successful in several installations. Its development is the result of a long period of experimenting and shop work on the part of the manufacturer.

Ever since napkin folding machines were built, belts for the delivery of the napkins before packing into the receiving machines have been used, and the manufacturers have been looking forward to their elimination in order to increase efficiency so that there would be no belts to wear out or to be repaired. Up to the development of this new Beltless Napkin Folder, folding, cutting off, and delivering of napkins always have been done by carrying the sheet down with belts. On this new machine the packing paddle passes into grooves in the folding roll. The folded napkins are carried down in front of it. The napkins are then packed directly into the receiving magazine.

Folding is done by vacuum similar to the regular system, except that a three-time roll is used. Additional units such as printing, embossing and die inking can be added to this new Beltless Folder in either the single or double type.

Hindu Lecturer Finds Old Friend in Camas

CAMAS, Wash., July 27, 1935—Kipling's immortal line, "East is East, and West is West and never the twain shall meet," was belied when Mohan V. Raj, of India, met E. W. G. Cooper in Camas recently.

Eighteen years ago when General Allenby's forces were driving the Turk from the Holy Land, a young member of the British Camel Corps met a young Lieutenant of a Hindu regiment at a Y. M. C. A. hut in Palestine, struck up a mutual friendship, and as it goes with soldiers, each went his way, losing all track of the other. Both went through the entire Egyptian and Palestine campaigns without meeting again.

Recently, Raj, who is an educated Hindu on a speaking tour of the United States, spoke in Camas. Cooper, recognizing the name and the picture in the paper, looked the visitor up and a happy reunion was the result, with the visitor from the East a guest in the Cooper home.

Mr. Cooper, who came here from England, is on the technical staff of the Crown-Willamette Paper Company.

Canadian Pulp Mills Fear Japanese Trade War

Dominion Government Replies to 50 Per Cent Surtax Imposed by Japan on Canadian Products, by Adding 33 1/3 Per Cent to Tariff Against Nipponese Goods—Surtax on Lumber and Pulp Particularly Affects Forest Industries of British Columbia

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 29, 1935—Hopes that a last minute settlement of the trade difficulties between Canada and Japan might be brought about have been dashed to the ground, and an open trade war is now under way, the Canadian government having replied to the 50 per cent surtax imposed by Japan against ten leading Canadian exports by imposing an additional tariff of 33⅓ per cent against Japanese goods. Both governments are continuing to negotiate, and it would be possible to effect a change overnight.

The Japanese surtax applies to lumber, pulp, packing paper, match paper, flour, starch, gluten and minor items and affects the province of British Columbia far more than any other part of Canada. Indeed it is announced from Vancouver that the surtax on lumber and pulp has already had a crippling effect on the forest industries of that province.

Pulp mills are particularly hard hit, as Japan has been an important customer for these. Newsprint is not affected, the reason being apparently that the stoppage of imports from Canada would embarrass Japan. The surtax does not apply, either, to nickel, copper, and other metals.

The root of the dispute is Japan's objection to Canada's dumping duties, imposed because the Japanese yen, which at par is worth 48 cents in Canadian money, has depreciated to a value of only 29 cents. Canada has continued to assess Japanese imports at par value, the difference between this and actual value being collected in the form of a dumping duty.

In the negotiations Canada offered to waive the currency dumping duty on goods of a class or kind not made in Canada, and in other goods it was proposed to decrease the dumping duty by a percentage based on the rise of prices and living costs in Japan. So far these proposals have proved unacceptable.

Meanwhile, Dr. W. A. Carruthers of the Economic Council of British Columbia, has stated that the Japanese surtax will throw 3000 men, earning $3,000,000 per year, out of work.

Fraser Companies' Earnings Higher

Fraser Companies Ltd., including Fraser Paper and the Restigouche Company, reports higher earnings in the first six months of 1935, according to a letter from the company to Fraser Companies 6 per cent bondholders over the signature of President K. S. Maclachlan. In this letter bondholders are urged to exercise their option of accepting common stock in lieu of interest for 1935.

Earnings for the six months after operating expenses, taxes, etc., and provision for bad debts but before interest, depreciation and depletion, amounted to $897,915 against $839,760 in 1934.

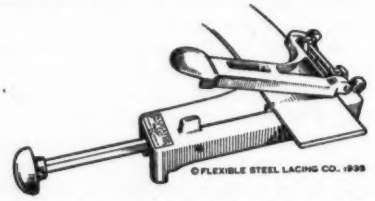
After providing for bank interest, current and non-current, as well as bond interest paid and accrued, there was a net profit of $300,232 as against $248,083 in the like period of last year. Net working capital as at June 30, 1935, was $1,859,645 as compared with $1,078,655 on December 31, 1934, and $530,352 on June 30, 1934.

In his letter to bondholders, Mr. Maclachlan said: "The improvement in operating results and in working capital to which I referred in my letter of 19th July, 1934, has continued. The volume of business remains unsatisfactory and has prevented the improvement being more substantial. I repeat the statement made last year, that the company's most urgent need is for an improved working capital position. Until the weakness in this respect is cured, the company is not in a good position to take full advantage of its opportunities or to make those replacements and changes in its manufacturing equipment which are required for maximum efficiency and minimum cost of operation."

Alligator Belt Cutter

An 8-inch flat belt cutting tool (U.S. Pat. 1,992,600), which employs a new principle in mechanical belt cutting, is announced by the Flexible Steel Lacing Company, 4607-31 Lexington street, Chicago.

The cut is made by pushing the knife through the belt from one edge to the other. The knife is mounted on a plunger in a slot, as illustrated, and is operated easily by a direct arm push without mechanical leverage.



NEW PRINCIPLE IN MECHANICAL BELT CUTTING

The knife goes "like cutting cheese" through most belting, but it will cut even the thickest and toughest belts up to 8 inches in width with surprisingly little effort. The knife, of special alloy steel, will make several thousand cuts and is easily replaceable.

The belt is held immovable by the equalizing clamp or hold down while the cut is being made. The clamp is also a guard for the blade. Clamp and frame are strongly built of aluminum alloy, the weight of the cutter being only 4 lbs. and 3 ozs.

The cutter is used either on the bench, as illustrated, or is up-ended on the floor, if desired.

Provide for Change in Directorate

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., July 27, 1935—A document was filed this week with the county clerk denoting a certificate of change in the directorate number of members of the Sherman Paper Company. Where the directorate is now at the determinate number of five in the future there may be not less than five nor more than seven. Application for the change was signed by J. Victor Baron, vice president, and O. P. Barnes, secretary. The company was incorporated in 1914 as the Taggart Paper Company and subsequently in 1920 the name was changed to the Sherman Paper Company with Mrs. Alice T. Sherman at the head.

New England Fine Paper Mills Fairly Active

Business During Past Week Was Satisfactory for the Season—Demand for All Grades of Paper Continues Greater Than In Corresponding Period Last Year—Wrapping Paper Continues Steady, With Summer Specialties Moving Freely

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 29, 1935—Taken as a whole, the demand for paper in the Boston market during the last week continued greater than that of a year ago. In some quarters it is intimated that there was no more than the usual seasonal dullness. Prices have held up steadily. Some of the trade felt that when the NRA was eliminated there would be "some cutting and slashing," but it is reported that this has not been the case. Fine paper has moved in surprisingly good volume for the time of year. The demand for fancy papers is good. Wrapping paper business has held up better than usual for the season. Summer specialties, particularly drinking cups, have been moving well. The paper trade is looking forward to considerable business the coming fall. The call for box boards for shoe carton purposes continued, but otherwise the demand for boards has been fair to quiet.

Paper stock in general is in a favorable position, with prices rather stiff and tending to advance. Business with fine paper mills was good during the week for the time of year. At the office of a concern handling old papers it was intimated that mills have been telephoning, anxious to buy material. Under old papers, mixed papers have advanced to .22½ @ .25 from a previous range of .20 @ .22½ and container manilas, closely related to mixed papers, have gone up to .27½ from .25. These commodities were in good demand. Old newspapers were taken somewhat freely at the same prices, .25 @ .27½. Bagging was reported to be still rather strong. Some lines of new domestic rags, such as the best grade of white shirt cuttings, unbleached washables, and khaki cuttings are scarce and strong. Roofing stock was the feature of old domestic rags with considerable activity. Foreign rags were hardly more than fairly active, with a limited movement in dark cottons.

A leading paper stock concern here made a profit of more than $4,000 for the first six months of the year over the amount made during the corresponding period in 1934. The company sold a fair volume of tonnage during July and is sold ahead for August.

News of the Industry

A motion picture film, entitled "The Story of Solka," has been prepared for the Brown Company. The film shows the North woods logging, the conversion of logs into Solka, and the manufacture of such products as hats, handbags, curtains, etc. It also shows the Solka promotion program presented by Sacks, Fifth Avenue, and Sterns, both of New York. The Brown Company has brought out some new lines of towels made of Solka.

The Marvellum Company, Holyoke, Mass., of which Henry L. Goodman, of this city, is representative, has issued to the trade Book No. 92, containing a swatch of Silvergloss Papers, box coverings, in white, light and dark blue, buff, green, lavender, pink, green, gold, red, black and silver.

Members of the paper industry from Southern Massachusetts and Connecticut, Worcester, Providence, Woonsocket, and Pawtucket attended the outing of the Rhode Island Stationers Association, of which Walter Dolliver, of the Providence Paper Company, is president, at the Warwick Club, Warwick, R. I., July 24. Golf, baseball, swimming and many other sports featured the afternoon's program.

The commissioners of the Department of Labor and Industries is to hold a public hearing August 6 at the State House on the petition of the Erving Paper Mills, Erving, Mass., that the work of female employees engaged in the sealing and packing of paper products be declared a seasonal occupation.

A luncheon meeting of the Fine Paper Division of the New England Paper Merchants Association was held Tuesday at the Boston Chamber of Commerce, with President William N. Stetson, Jr., presiding.

John H. Brewer, vice-president of Storrs & Bement Company, has returned from a two weeks' motor trip to Gaspe, Que., on which he was accompanied by Mrs. Brewer.

Henry L. Goodman and family have taken a cottage at Newport, R. I., for the month of August.

Robert A. Ford, associate of Mr. Goodman, has returned from a two weeks' vacation passed at his camp on a lake near Franklin, N. H., and at Wessagussett Beach, near Weymouth, Mass.

W. A. Welsh, of the Welsh Paper Company, Philadelphia, with mills in Holyoke, Mass., called on Henry L. Goodman last week, on his way to Martha's Vineyard. Mr. Goodman is a representative of that company.

A. Baron, head of the Royal Card and Paper Company, New York City, passed through Boston last week on his way to Poland Springs, Me.

George Whalen, formerly of the Nashua River Paper Company, East Pepperell, Mass.; William J. Bigley, and Vincent A. Murphy are recent additions to the sales staff of Whitney Bros., Inc.

The Hammermill Paper Company, Erie, Pa., is preparing a comprehensive sample book of 210 pages presenting its entire line of advertised papers, which will be ready for distribution soon by Storrs & Bement Company and Carter, Rice & Co., Corp., representatives of the company in Boston.

National Paper Products Improvements

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., July 29, 1935—Extensive improvements have been completed at the National Paper Products Company under the supervision of Hodge & Foster, contractors. A new brick wall has been placed on the front of the office building which replaces a dilapidated condition besides safeguarding employes. Several weeks were required to complete the work and during construction a conveyor used for freight purposes on the siding adjacent to the plant was elevated. Previously the conveyor had been stretched from the mill to cars across the mill walk which hindered passage when in use. A large number of new windows were also installed to improve lighting facilities and these are of modern design with steel bracings. They replace the old wooden frames formerly used.

Paper Manufacturers and Merchants Confer At East Providence, R. I.

BOSTON, Mass., July 29, 1935—A mill and merchants' conference was held at the Pomham Club on Narragansett Bay, Rhode Island, on Friday, July 26.

The conference was preceded by a sail around Narragansett Bay which started at Fall River, Mass., where the guests from New York, Philadelphia and points further west arrived on the Fall River Line boat from New York City.

Paper men from Boston and throughout New England drove to Fall River in automobiles.

On reaching the Pomham Club, East Providence, the guests enjoyed a Rhode Island shore dinner.

Following the dinner, Orin Summerville, of the Beckett Paper Company, Hamilton, Ohio, and president of the Paper Makers Advertising Club, opened the conference.

There were 48 guests, among whom were the following:

Percival W. Eason, Lathrop Paper Company, New York City;

W. Steadman, J. E. Linde Paper Company, New York City;

F. W. Van Horne, J. F. Sarle Company, New York City;

Douglas C. Barry, Lathrop Paper Company, New York City;

M. Lincoln Simpson, Knight, Allen & Clark, Boston;

J. P. Mathers, Knight, Allen & Clark, Boston;

John R. Halkyard, Providence Paper Company, Providence;

Graham Blandy 2nd, Chas. A. Esty Paper Company, Worcester, Mass.;

E. L. Cummings, Storrs & Bement Company, Providence;

C. W. Dearden, Butler-Dearden Paper Service, Worcester;

F. P. Appleton, Miller & Wright Paper Company, New York City;

Harold R. Kinley, Judd Paper Company, Holyoke;

Oswald F. Marquardt, Marquardt & Co., New York City;

John H. Brewer, Storrs & Bement Company, Boston;

Fred Schlosser, Schlosser Paper Company, New York City;

George A. Ernest, The Thomas W. Price Company, Philadelphia;

Ryder H. Gay, Arnold Roberts Company, Providence;

W. W. White, James White Paper Company, Chicago;

Charles E. Sickles, Bulkley, Dunton & Co., New York City;

R. B. Pierpont, John Carter & Co., Providence;

Leon M. Poore, John Carter & Co., Boston;

Frank Golding, John Carter & Co., Boston;

Edson Dunbar, Crocker-McElwain Co., Holyoke;

Orin R. Summerville, Beckett Paper Company, Hamilton, Ohio;

Roland B. McDougall, International Paper Company, New York City;

Verne Williams, Lee Paper Company, Vicksburg, Mich.;

Chan Cooley, American Writing Paper Company, Holyoke;

R. W. McCormick, Knowlton Brothers, Watertown, New York;

Cy Norton, Strathmore Paper Company, West Springfield, Mass.;

Ernest A. Stache, Chemical Paper Manufacturing Company, Holyoke;

T. W. Harrington, Crocker-McElwain Company, Holyoke;

Lawrence R. Clark, Hampden Glazed Paper and Card Company, Holyoke;

R. F. Linsert, American Writing Paper Company, Holyoke;

Maurice A. Park, Marvellum Company, Holyoke;

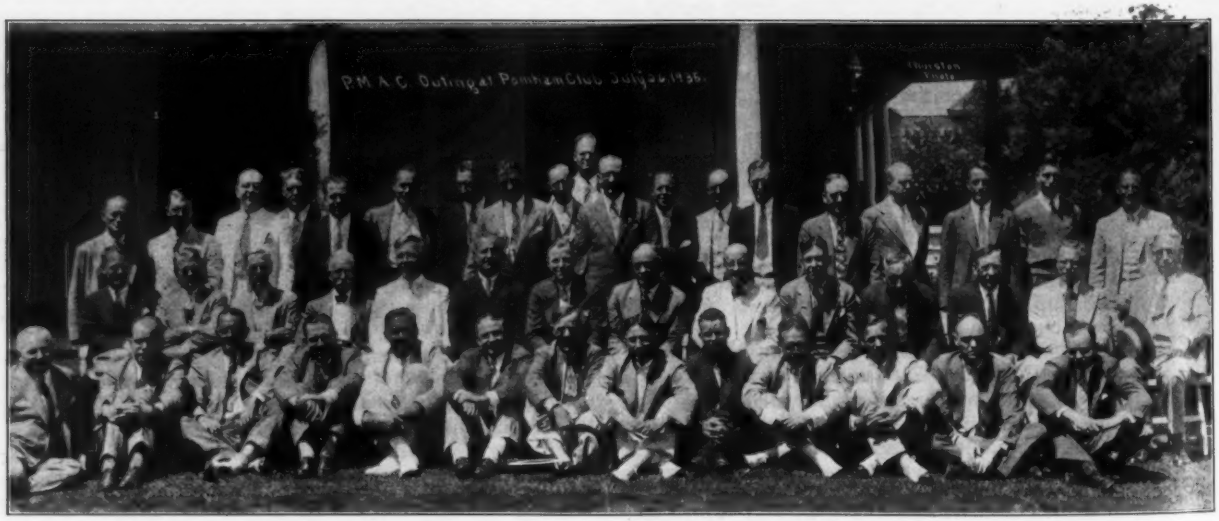
Butler Cox, Wheelwright Paper Company, Leominster, Mass.;

Frank Winter, Carter Rice & Co., Corp., Boston;

Hubert Foster, The Mead Sales Company, New York City;

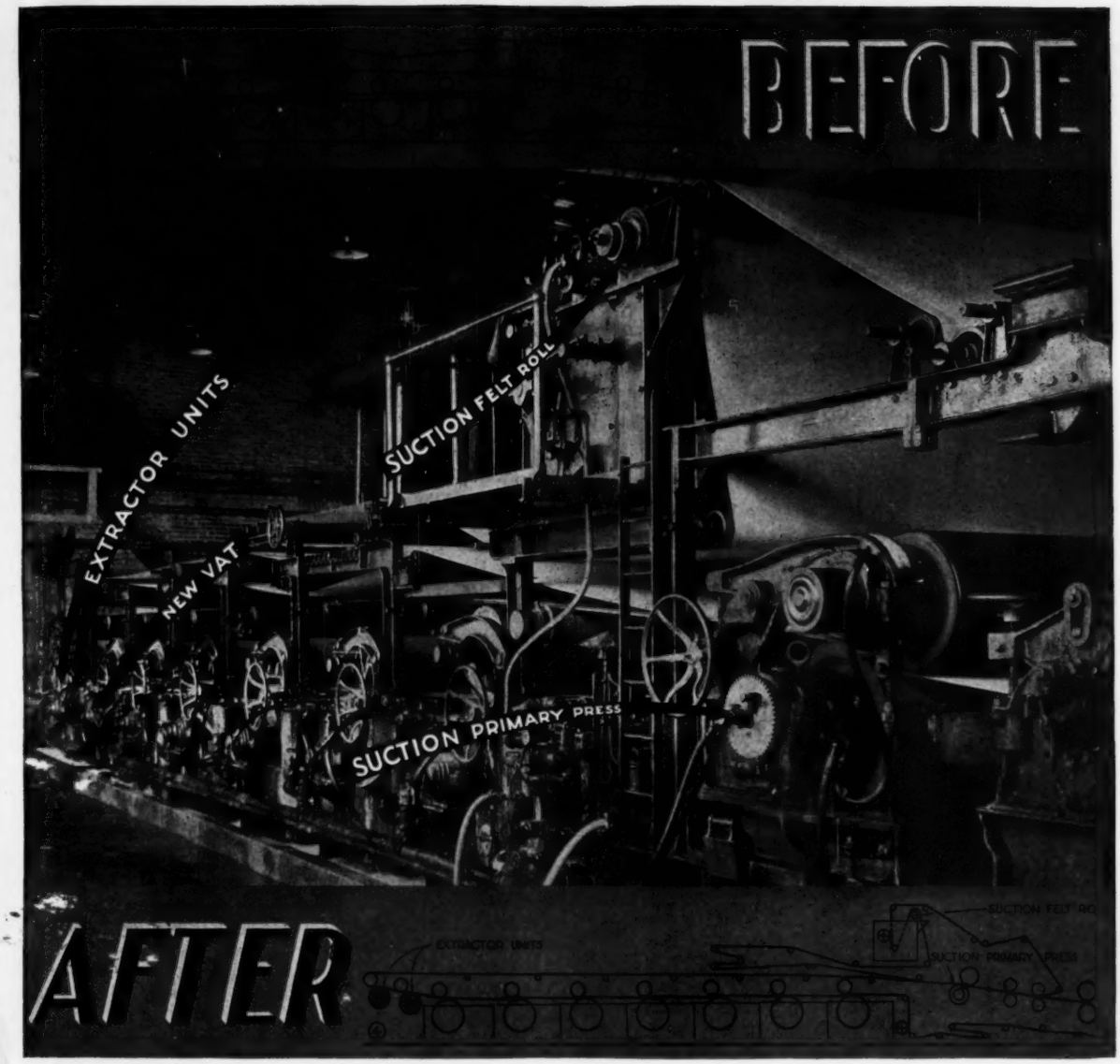
Lee H. Hulett, Chemical Paper Manufacturing Company, Holyoke, and Brad Stephens, of Boston.

All were guests of Mr. Stephens.



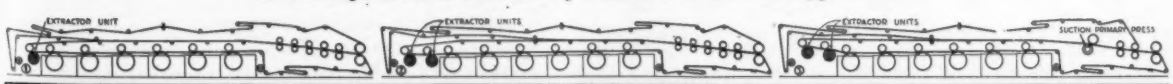
PICTURE TAKEN AT CONFERENCE OF PAPER MANUFACTURERS AND MERCHANTS AT EAST PROVIDENCE, R. I.

DOWNINGTOWN



"Rome wasn't built in a day" and likewise, it is not necessary to change over to a complete Downingtown Duo-Dehydrating Press Part in order to obtain immediate, appreciable benefits. You can gradually modernize on the "Add-a-Roll" scheme as pictured, by first installing an Extractor Unit (See Diagram 1), then another Extractor Unit (2), then eliminate the battery of primary presses and add a Suction Primary Press (3), then add a Suction Felt Roll and a new vat, if desired (4) etc., etc. Each step in this installment modernization produces marked benefits which rapidly justify the next step toward complete Duo-Dehydration. The Downingtown Mfg. Co., Downingtown, Pa.

Duo-Dehydration is Covered by Patents Granted and Applied For.



No Board Machine is Modern *Without* DUO-DEHYDRATION

TAPPI Fall Meeting—Philadelphia-Atlantic City—Sept. 18-21.

Glass Makers Open War On Encroaching Paper Bottles*

The trouble started two years ago in Philadelphia. A leading dairy, after an intensive campaign exalting the merits of paper vs. glass, scrapped its bottles. Quaker City housekeepers got their milk in lightweight waxed cardboard containers.

The idea caught on elsewhere, especially in Newark and Atlantic City. Last March several hundred stores in and around New York—A. & P. branches included—switched from glass to paper.

A few weeks ago, a big Cleveland dairy fell in step. Moreover, its advertisements illustrated the standard bottle's dangers by picturing a little girl falling on one and gashing herself.

Controversy

Harassed manufacturers finally rebelled. Last week in New York they held a war council. Leading producers met at the Glass Container Association's offices and decided to launch a defensive campaign—to educate dairymen and the public on the "advantages" of glass bottles.

Two firms produce more than half of the country's 300,000,000 annual milk bottle output: Thatcher Manufacturing Company and Owens-Illinois Glass Company. Less than a dozen smaller firms share the remainder.

Three firms make most paper milk containers: American Can Company, American Paper Bottle Co., and Sealed Containers Corporation, which last year sold 55,000,000 of its Sealcones. Other big producers include Purity Paper Vessels Company and Sealright Company, Inc.

Recently a host of smaller firms entered the fast-growing business.

Paper bottle advocates stress that they open more easily, take up less space in the pantry, and pour without dripping. If dropped, they don't break. An air space at the top allows for expansion in freezing. Empty, they can be harmlessly crushed or used to kindle fires.

Economics

Glass milk bottles, on the other hand, go back to the dairy for refilling. Before returning them, housewives sometimes use them as vinegar, gasoline, or kerosene containers. Glass defenders reply that dairies sterilize them before each filling. Bottles travel on a conveyor belt into a machine which washes them in an alkaline solution and sprays them with chlorine; stiff brushes scrub away clinging dirt particles; hot water or live steam kills remaining germs.

Economy counts, too. Paper containers cost about a penny apiece, compared with 4 or 5 cents for a glass milk bottle. But the dairymen use each bottle an average of 25 to 30 times, reducing its cost for each filling to about three-tenths of a cent, sterilization included.

Dairies switching to paper containers have to scrap their bottle filling apparatus for machines costing some $12,000 apiece. In many cases these manufacture the containers on the premises. Spray guns coat the paper with melted wax to make it waterproof. In one continuous operation the machine chills the wax, fills the containers with milk, and seals them.

So far the spread of paper containers has extended to milk sales from stores rather than house-to-house delivery. Grocers who don't have to charge a deposit for the bottle find their sales increase. And paper saves them the bother of handling empty bottles.

Cream Line

Cardboard containers weigh less than 2 ounces apiece, compared with almost 2 pounds for an empty quart-size glass milk bottle. Much more milk also can be loaded on trucks in paper than in glass. To dairies delivering to stores these two factors mean big savings.

But the glass milk bottle still stands on most private doorsteps. Here paper offers little economy because the container's weight plays a small role in delivery costs. The milkman's time for each call is what counts.

The housewife does, too. In a survey, glass-bottle makers found many people prefer glass because it shows the contents—especially the cream line. Some customers said paper containers "make the milk taste like cardboard."

Meanwhile bottle manufacturers have adopted a new idea to give the standard milk bottle a modern merchandising touch. Within the past two years they imported from Europe a process which prints letters and designs so the ink sinks into the glass and cannot wash or scratch off. Today one-fifth of all milk bottles vaunt bright red or blue brand names, trade marks, and slogans, vividly outlined against the whiteness of their contents.

* News-Week, New York.

E. H. Bartlett 50 Years With Bird & Son

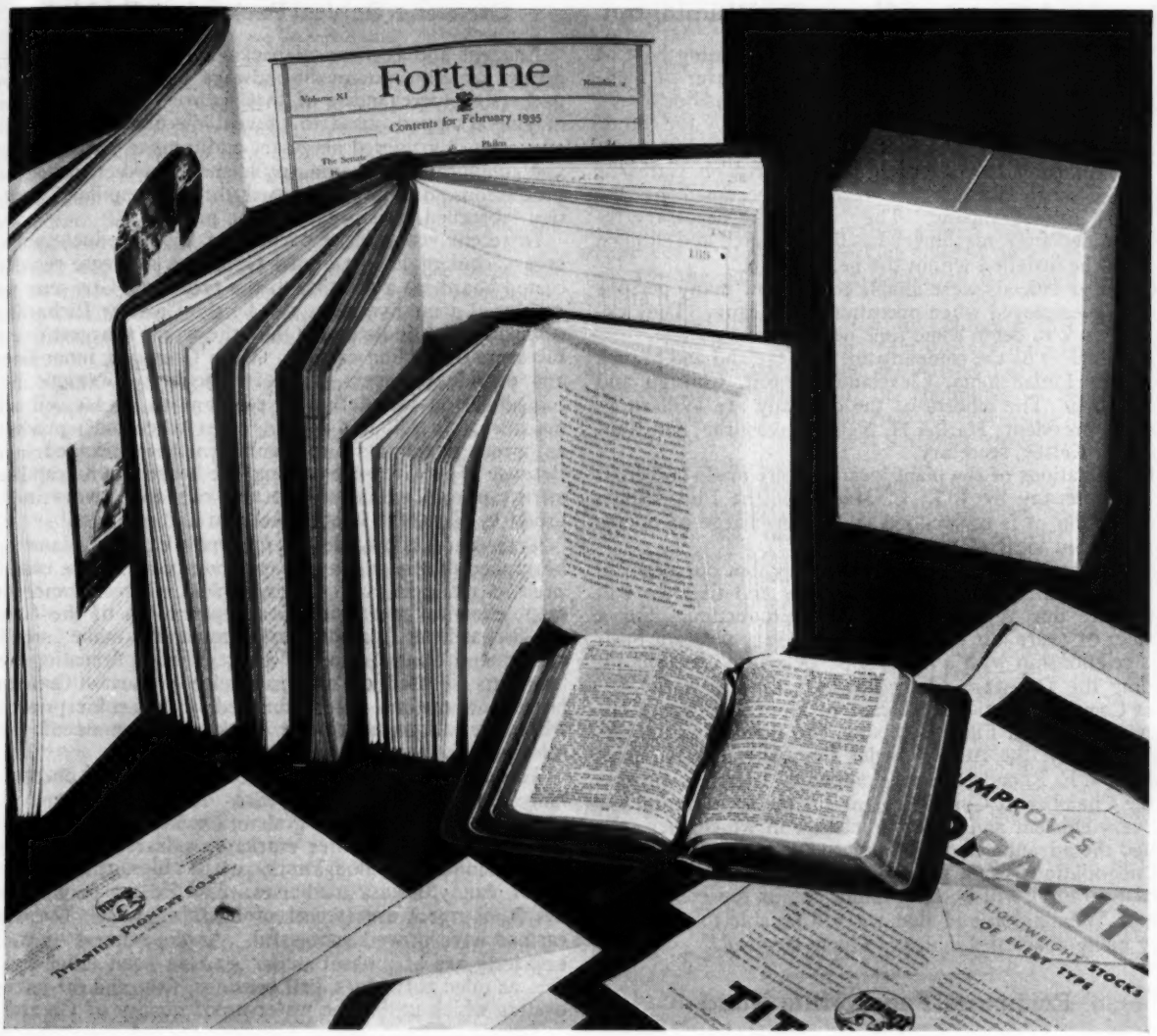
[FROM OUR REGULAR CORRESPONDENT]

EAST WALPOLE, Mass., July 29, 1935—More than fifty friends and business associates of Elmer H. Bartlett assembled at his estate in Plainville on July 25 to celebrate his fiftieth anniversary with Bird & Son, Inc. An informal buffet supper and reception was held as a tribute to his phenomenal period of service. P. R. Allen, chairman of the board of directors of Bird & Son, Inc., expressed the attitude of the organization toward Mr. Bartlett the man on whom one could always rely in any storm or catastrophe of industrial life. At the conclusion of this happy gathering, Mr. Bartlett was presented with a check from Bird & Son for $500, a traveling bag, and a leather traveling kit.

Elmer H. Bartlett, is the oldest executive in point of service. His connection with the company began August 25, 1885, when he came to work as an office boy in the little one room office that housed the entire executive force of F. W. Bird & Son at that time. Mr. Bartlett has filled the positions of timekeeper, paymaster, bookkeeper, order clerk and many others, covering at one time or another about all the various tasks in the office.

Sutherland Paper Co. Pays Extra

KALAMAZOO, Mich., July 29, 1935—Directors of the Sutherland Paper Company have declared an extra dividend of five cents and regular bi-monthly dividend of ten cents, both payable Aug. 31 to stock of record Aug 20. Similar extra was paid on June 29. The company reports for the six months ended June 30, net profit of $290,160 after charges and federal taxes, equal to $1.01 a share on 287,000 shares, against $202,797, of 70 cents a share, in the first half of 1934.



Increases OPACITY *in Stocks of Every Type*

• Titanox-A (Titanium Dioxide) offers the easiest and most satisfactory means of opacifying stocks with a minimum of loading material.

This modern white pigment has the highest index of refraction of all the white pigments. Consequently a very small amount produces an opaque sheet of exceptional whiteness and brightness.

Moreover, Titanox-A presents no difficulties in use. It may be used as a beater addition; as a surface size application; or in the coating mix. It is readily retained in the pulp when used as a beater filler, and easily dispersed and suspended in surface sizing or coating mixes. Since it is chemically stable and inert there is no discoloration under all papermaking conditions.

Among the papers that are widely opacified with this pigment are: Magazine, Ledger, Book, Bond, Envelope, Bible, Patent Coated Box Board, Waxing and Coated Stocks.

The services of our paper technicians are always available. Just address our nearest branch office.

• • •

TITANIUM PIGMENT COMPANY

Manufacturers of

TITANOX-A *(Titanium Dioxide)*
TITANOX-B *(Titanium Barium Pigment)*
TITANOX-C *(Titanium Calcium Pigment)*

TAPPI Fall Meeting—Philadelphia and Atlantic City—September 18th, 19th, 20th, 21st, 1935

TITANOX

111 Broadway, New York; Carondelet Station, St. Louis, Mo.; National Lead Co. (Pacific Coast Branch), 2240 24th St., San Francisco, Cal.; Canadian Distributor: Wilson, Paterson, Gifford, Ltd., 3552 St. Patrick St., Montreal; 132 St. Helen's Ave., Toronto.

Cleveland Container Moves To Wilmington

WILMINGTON, Del., July 29, 1935—The coming here of the Cleveland Container Company, manufacturer of mailing tubes, paper winding cores, metal and mailing cases, drug packers and fibre cans, was announced by the industrial department of the Chamber of Commerce last week.

The company has acquired the property on Garasche Lane in south Wilmington formerly occupied by the Artillery Fuse Company. They will make necessary repairs immediately, machinery has been ordered and shipped and will be installed within the next month.

Chamber officials were unable to say how many persons would be employed when operations are begun. They expected work to begin some time next month.

Main offices of the company are in Cleveland and branch plants in Philadelphia, Cleveland, Detroit, Chicago and New York. The officers of the company are Willard F. Walker, president; Harlan H. Newell, treasurer; and Raymond T. Kelsey, secretary.

Investigations of the plant location were made on behalf of the company by J. R. C. Master of the Philadelphia branch, who, it is understood will be in charge of operations of the local plant.

Mr. Master said: "We are very happy that our negotiations have turned out so satisfactorily and that we will soon have our Wilmington plant in production. For a number of years our company has had very pleasant business relationship with a number of Delaware concerns including the Delaware Floor Products Company, the du-Pont Company, National Vulcanized Fibre Company, Continental Diamond Fibre Company, the Bond Manufacturing Company, the Atlas Powder Company, the Hercules and the J. E. Rhoads & Sons Company. I want to express to the Chamber of Commerce our sincere appreciation for the very efficient and effective manner in which they presented the advantages of Wilmington as well as conducted the negotiations for a plant building. We trust that our local operation will become important in the commercial life of Wilmington and that we will be able to repay the very many courtesies which we have received."

Rushmore Paper Mills Build

[FROM OUR REGULAR CORRESPONDENT]

GOUVERNEUR, N. Y., July 29, 1935—Construction on a new addition was started this week by the Rushmore Paper Mills which recently acquired the property of the defunct Oswegatchie Paper Company. The structure is to be of steel and concrete construction, 90 by 160 feet, and will be used for warehouse and finishing purposes. Plans also call for the building of new roadway entrances to the mill from the main highway. The gates to the flume at Natural Dam were opened this week and the water power from the Oswegatchie River was turned into the mill in order to test the equipment. However, it will probably be several weeks before the plant is placed in operation as considerable repair work is yet to be completed. The mill has been shut down for several years and about 200 persons will be employed when it reopens.

Sol-Val Felt Soap

The Bur Pre Laboratories, Inc., manufacturing chemists, 1224 University avenue, St. Paul, Minn., are putting out Sol-Val soap in paste form for washing felts. This soap contains no caustic or soda, therefore it does not harden or shrink felts. It takes out all fillers, rosin and restores the nap and helps to prolong the life of felts. Sol-Val is easy to handle and saves time in washing.

Greasene Solves Packaging Problem

Efficient and economical packaging of products with a greasy or oily content has always been a problem for packers of merchandise of that nature. Inner liners and outside wrappers, used to prevent discoloration of packages, were considered necessary additions to package costs, and complicated packaging problems. Further, despite all precautions, ordinary boxboard through capillary attraction, absorbed moisture from the product.

In recent years, large packers of such products with a greasy content have adopted Greasene, a grease-resistant carton board, as a solution to the problem. Greasene was developed some five years ago by the Gardner-Richardson Company of Middletown, Ohio, the world's largest manufacturers of folding cartons. With Greasene, inner liners and outside wrappers are not necessary. Greasene is a coated carton board that is resistant to grease, oil and moisture. It will not discolor even when such products as bacon, doughnuts and hamburger are packaged in it. Because of its Greasene coating, the board has no capillary attraction and retains the natural oils and flavors in the product. Greasene is both tasteless and odorless.

Greasene is adaptable to any type of product, and can be applied to any grade of paper box board. The coating itself is made in two grades, and in every instance the sales, chemical and production departments of the Gardner-Richardson Company cooperated to make specific recommendations as to the exact grade of coating and board to be used on any particular product. Greasene board and cartons can be finished in full color printing, with illustrations and trade marks losing none of their sales effectiveness.

The use of the new coated board has grown phenomenally during the past five years. At present every sort of product from bacon to graham crackers is using Greasene economically. Butter crackers, soda crackers, peanut butter sandwiches, doughnuts, potato chips, cakes, meats, bread, candy, greasy medicines, oiled leather goods, even hot hamburgers are typical products on which Greasene cartons have proved successful. At the request of packers, tests are at present under way on such other products as oiled cartridges, ball bearings, fish, and ice-packed oysters which utilize the water-proof quality of Greasene.

Among present users of Greasene cartons are such leaders as the National Biscuit Company, Loose-Wiles Biscuit Company, Kroger Grocery and Baking Company, Hampton Cracker Co., Crescent Cracker Co., Ward Baking Co., Richmond Baking Company, Chattanooga Baking Company, White Castle Hamburger Systems, H. H. Meyer Packing Company, and others.

Wood As Raw Material for Chemical Commodities

The American Chemical Society at its meeting at San Francisco, Cal., August 21, 1935, will conduct a symposium on "Wood As a Raw Material for Chemical Commodities." The program for this symposium is as follows:

Introduction by chairman H. K. Benson, University of Washington, Seattle, Wash.

"Sub-Microscopic Structure of Cellulosic Fibers," by O. L. Sponsler, University of California, Los Angeles, Cal.

"The Polyuronides of Wood," by Ernest Anderson, University of Arizona, Tucson, Ariz.

"Lignin of Wood," by Walter M. Fuchs, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

"Chemical Derivatives of Wood," by Ralph E. Montonna, University of Minnesota, Minneapolis.

Philadelphia Paper Industry Steady

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 29, 1935—While there is virtually little change this week from that of the week previous, those in the paper trade here are looking ahead to betterment with the passing of August, which is generally conceded to be a pivotal month in furnishing a basis for probable trends of this industry. Dealers are fairly well stocked with many of the standard grades and are adding new lines in anticipation of a definite expansion that has been forecast.

Due to the rising temperature in this area, there has been an unprecedented demand for all sorts of containers. The ice-cream cartons and summer specialties are moving faster than ever before and are likely to continue during the summer season.

Six months ago, at the suggestion of Norbert A. Considine, president of the Paper Trade Association of Philadelphia, and of the Paper House of Pennsylvania, there was inaugurated what is known as the Monthly Sales Reporting Plan, the purpose of which is to have on file at the Association's headquarters an authentic record of sales made each month by the members. This information is given in code to a central statistical bureau in Philadelphia, and is obtained from this bureau by Executive Secretary Doris E. Lewis, who keeps it on file, and is available to all those members who subscribe to the service.

During this 6-month period, the figures show a general increase in the paper business over the same period last year, and the volume of business covered by the reporting members is large enough to warrant the assumption that the increases are representative of the trade as a whole in this area.

Approximately, the gains are as follows:

Fine Paper—Warehouse sales	4	per cent
Fine Paper—Mill sales	9½	" "
Registering a total gain of 6½ per cent		
Wrapping Paper—Warehouse sales	5	" "
Wrapping Paper—Mill sales	10	" "
A total gain of 6½ per cent for this branch of the industry		

Actual figures upon which these percentages are based cannot be supplied for publication, as they represent confidential information from reporting members.

LeRoy S. Bishop, treasurer of the Paper Trade Association of Philadelphia, and also of Raymond & McNutt, 9th & Sansom Streets, is motoring to northern Ontario, Canada, to visit his son who is attending a summer camp. Mr. Bishop is accompanied by Mrs. Bishop and their two daughters.

Mrs. Doris E. Lewis, executive secretary of the Paper Trade Association, is planning to spend the present week of her vacation on the golf links in and around Philadelphia.

Skankraft Cartel Continued

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 31, 1935—The Skankraft Cartel, an association of manufacturers of kraft paper in Sweden, Norway and Finland organized late in 1932, has been continued for another year, according to a recent report from Acting Commercial Attache Osborn S. Watson, Stockholm. At a meeting of the members where this decision was arrived at it was pointed out that the influence of the cartel in stabilizing prices was quite evident. The continuance of the agreement without any expression of discontent on the part of the members is an indication of the importance and usefulness of the organization.

Ohio To Eliminate Stream Pollution

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, July 29, 1935—What appears to be a determined effort on the part of Southern Ohio manufacturers, business men and citizens to effect elimination of stream pollution is in progress, with Cincinnati, as the headquarters of the organization.

At a meeting of the Stream Pollution Committee of the Federated Civic Associations a resolution was passed to appoint a committee to arrange a joint meeting of representatives of all bodies working toward pollution elimination for the purpose of coordinating the many separate efforts.

Necessity of quick action to obliterate the pollution poured into the Ohio river from upriver industrial plants and mines was pointed out by Alfred LeFeber, sanitary engineer, and a member of the committee. The percentage of acid wastes in the river is increasing each year and within a few years will seriously threaten the purification plant in Cincinnati.

Miami Valley firms have been laboring for some time to eradicate pollution and considerable progress has been made from the fact that paper mill owners have cooperated whole-heartedly.

In Dayton, there were evidences of pollution when dead fish were found by the thousands in the Great Miami river. At the time paper mill men denied their plants had emptied dangerous refuse liquors into the stream. In other sections of the valley where paper plants were located the source of contamination was sought, and in some cases, found.

At no time have the mill men of this section of Ohio failed to work in harmony with public officials or federated clubs in their effort to effect stream purification, and there are indications that they will join the present movement.

It is planned to interest the Federal government in the work. Because of the upper Ohio river pollution, the consensus of the committee was that the final co-ordination movement must come from the Government in order to clean up the entire pollution situation.

Financing For Olympic Forest Products

[FROM OUR REGULAR CORRESPONDENT]

SEATTLE, Wash., July 26, 1935—Through Blyth & Co., Inc., Seattle investment banking house, Olympic Forest Products Company, Inc., has approved an issue of one million dollars of the company's serial debentures. This will make possible a substantial interest saving and lower funded indebtedness. Facts of the offering were announced here as bearing an average interest rate of 3 per cent, refunds first mortgage 6½ per cent bonds due September 1, 1936.

Debentures are bracketed in five series of $200,000 each. Coupons range from 1½ per cent to 5 per cent according to maturities, which run from July 1, 1936, to July 1, 1940. Offering price is 100 and accrued interest from July 1, 1935.

Olympic Forest Products Company, Inc., are headed by E. M. Mills, president, and J. D. Zellerbach, vice-president. The company engages in manufacture of sulphite pulp and special grades of high quality pulp. Mills are located at Port Angeles, Wash.

The general upturn in the pulp industry is reflected in the company's financial statement. Net earnings available for interest on the debentures were more than twelve times the requirements on April 30, figures released as of that date indicate. Thus Olympic Forest Products have continued to maintain the trend of better business.

The New Payroll Tax Under The New York State Unemployment Insurance Law

By J. S. Seidman, C.P.A.[1]

The year 1936 will find a new tax on the New York State horizon—a tax on payrolls. The ultimate rate of tax will be 3 per cent, but to ease the approach, the rate for 1936 has been made 1 per cent and for 1937, two per cent. The progenitor of the tax is the recently enacted Unemployment Insurance Law.

While January 1, 1936 is technically the starting time for the tax, it is the 1935 payroll that seals the employer's fate in determining whether on January 1, 1936 he is subject to the tax. It is therefore fitting that the nature and scope of the tax be reviewed at this time, in an effort to promote an understanding of what is ahead, and enhance compliance with the law and cooperation with its administration. We will try to consider the subject in its broader aspect and in a simple, non-technical manner. For that reason, it will be necessary to glide over or omit entirely reference to many of the frills and fancies, exceptions and provisos that a law dealing with so complex a matter must necessarily contain. The law itself is of course the best reference for determining its precise content. Here, we shall deal merely with the highlights, and then only from the standpoint of the employer and the tax part. The status of the employee and his right to benefits will not be considered at all.

The tax depends upon certain phases having to do with the employment, the employee, the employer, and the wage. Each of these categories will be considered in their sequential order.

The Employment

The tax boundaries are employment in the State of New York. The prongs of the tax cannot clutch employment outside the State. Whether employment is in the state is made to hinge on where the employment arrangements are made, where the work is to be performed, and the residence of the employee. If the employment arrangements are entered into in the state, and any part of the work, no matter how small, is to be performed in the state, it is deemed employment in the state. A contract for employment of a resident of New York is taken as entered into in the state, irrespective of the actual facts. Where the greater part of the work is to be done in the state, it matters not where the employment arrangements are made, it is still New York employment.

From these principles, it is clear that it may make a considerable difference if a New Jersey mechanic, for example, whose work was to bring him only occasionally into New York were hired in New York or New Jersey. If the employment arrangements were made in New York, his entire wage for the year would be taxable, even if one day services were devoted to New York. There would be no tax, however, if the hiring was done in New Jersey. If the mechanic were a New York resident, it would make no difference where the employment contract was made, his wage would be taxable. Salesmen and travelling representatives are perhaps even better illustrations for the point involved.

It may be well to mention that the employment need not be for business purposes. Domestics, personal chauffeurs, etc. are all part of the employment field to which the tax may apply.

The Employee

The better paid, white-collar worker is not considered as among the employees on whose compensation tax must be paid. To put it somewhat more accurately and concretely, non-manual labor getting more than at the rate of $2500 a year, or more than $50 a week is not included in the term "employee." The same is true of the wife or minor child of an employer. On the other hand, it would appear that the compensation of all stockholders and officers of a corporation, in the corporation's employ, forms part of the taxable payroll if the stockholders and officers are respectively engaged in manual work or get less than the $2500 rate.

The Employer

The very small establishment will be free from tax because it requires four or more employees, and employment (though not necessarily of the same employees) of at least thirteen weeks or one-quarter of a year, to enter the tax domain. If there are less than four employees for more than three-quarters of the year, there is complete tax exemption for the year. Regardless of the number of their employees, charitable organizations, Governmental enterprises, and farmers are exempt.

In view of the thirteen week requirement, concerns planning to start in business towards the latter part of a year will be able to save the tax on the payroll for the remainder of the year by commencing during rather than at or before, the last quarter of the year. On the other hand, the winding up of an enterprise before the close of a year does not appear to absolve from tax liability once there has been the necessary number of employees and length of employment during the year. Incidentally, receivers, executors, trustees, etc. are considered as employers, just the same as would be those they represent.

In determining the number of employees and also the tax bill, if any, all places of employment in the state of the same employer are considered as one. Likewise, all corporations linked together by the same majority control or ownership, or succeeding one another, are treated as one employer. Then again, an employer is regarded as employing a helper or an assistant to an employee even though the helper or assistant is paid by the employee, if the employment is within the employer's knowledge. Finally, in order to spike the possibility of attempting to "beat the game" as to four employees through parceling out the work to sub-contractors, each of whom will have less than four employees, it is provided that an employer is also regarded as employing the employees of sub-contractors unless the sub-contractor assumes the tax liability under an agreement with the imputed employer, and the agreement conforms to regulations issued by the Industrial Commissioner, the official charged with the administration of the Act. The Commissioner has already made it known that it will be necessary for the sub-contractor assuming the liability to be a responsible person or organization.

[1] Seidman & Seidman.

The Wage

The tax is based on the wage payment. This means not only the amount paid directly to the employee in the form of salaries, commissions, bonuses, etc., but also all other types of remuneration, including value of food and lodging, that may be supplied by the employer, etc. Furthermore, tips or other gratuities received by the employee, though not paid by the employer, are regarded as part of the taxable wage. The Commissioner is to determine the value of such gratuities. Where payments to salesmen and other employees include reimbursement for travelling expenses, it may be well to segregate the compensation from the expense amount as the tax seems to apply only on the former.

The tax is measured by the wage *received* by the employee. This evidently excludes amounts like bonuses or commissions set up or accrued on the books for the employees but not yet paid them. Such amounts would of course have to be figured when the payments were made.

Payment and Penalties

Employment in 1935 of the requisite number of employees and for the requisite length of time make an employer subject to tax on January 1, 1936. Such employment in any later year makes the employer subject to tax as of the beginning of that year. No set schedule or program for the time and manner of payment of the tax is provided in the law. Instead, these matters are left to the Commissioner to promulgate. It is, however, prescribed that no payment is to be required before March 1, 1936.

The tax must be paid by the employer. The employee cannot agree to pay or contribute toward the tax. Any deduction, directly or indirectly, from the employee's wage for the tax is illegal. This does not, however, prevent making provisions with buyers of the employer's products for adjustment in price due to increase in production cost that may be brought about by the tax.

The tax is made a first lien on all the assets of the employer except as regards unpaid wages and prior recorded liens. If there is a failure to pay the tax, it can be collected by suit against the employer, and such a suit will take preference over all others on the court calendar. Unpaid taxes bear 6 per cent interest. In addition, 5 per cent of the tax is added if any deficiency is due to negligence, and 50 per cent if due to fraud. It is also a misdemeanor wilfully to make a false statement in order to refuse or fail to pay the tax. In the case of a corporation, the president, secretary, trsasurer, or officers exercising corresponding functions, are deemed to be guilty of a misdemaanor if the corporation is convicted.

Payroll Records

All employers—and this includes all employers not subject to tax—must keep a record of the number of employees and the wages paid them. The Commissioner has indicated that regulations will be issued as to the character of payroll records to be maintained. The probabilities are that employers that now have adequate records upon which to fill out income tax slips of wage payments to employees will not have very much changing or supplementing to do. Ultimately, because of the way benefit payments to employees are to be arrived at, it may become necessary for employers to record such data for each employee as hours worked, normal hours, full time weekly wage, each form of remuneration and deduction from the wage, seasonal, part time, and exempt employees.

The payroll records are to be subject to audit by the Commissioner. The failure to keep the required records, or the refusal to submit them to audit, is a misdemeanor.

Bankers Ask Uniform Practice on Checks

The Division of Simplified Practice of the National Bureau of Standards has announced that Simplified Practice Recommendation R50, Bank Checks, Notes, Drafts, and Similar Instruments, has again been reaffirmed, without change, by the standing committee in charge of the regular review.

This schedule, which recommends that there be adopted uniform sizes and arrangements of subject matter on bank checks, notes, drafts, and similar instruments, was first made effective on March 1, 1926, and was reaffirmed without change in 1927, 1929, and 1931.

The announcement was accompanied by a plea for universal adherence by Ronald Ransom, chairman of the Standing Committee, who said:

"The committee of the American Bankers Association having this matter in charge again wishes to urge universal adherence to the recommendation. Bank checks are the chief medium of exchange in the United States and represent the popular vehicle through which 96 per cent of all our commercial and business transactions is conveyed.

"The daily liquidation of this enormous volume of credit exchange constitutes nine-tenths of internal banking expense. Much of this expense, running well into the millions, can be saved through the universal adoption of standard sizes of checks and drafts, and uniform placement of essential data on their faces.

"During the past nine years, since the standard recommendations were approved, the American Bankers Association, the United States Department of Commerce, and other agencies have conducted a vigorous campaign for the universal adoption and use of standard size checks, drafts, and so forth, with the result that a subsequent survey along this line shows that gratifying progress has been made, and that over 85 per cent of all checks and drafts are of standard size.

"Some of the specific advantages which follow the adoption of this simplification program are:

"Saves paper by cutting from standard size stock without waste;

"Eliminates misunderstandings and inconvenience;

"Saves time in filing, finding, and handling while being checked;

"Eliminates wasted filing space through uniformity of size."

Printed copies of the recommendation may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents each.

V-Belt Drives

The installation and operation of V-belt drives is discussed in a new simplified 48-page book on V-belt engineering just published by The Gates Rubber Company, Denver, Colo. The book has been made so simple to use that any drive can be completely designed, and the delivered price determined, from this one text.

A section on the care of V-belt drives outlines an easy way of checking tensions, and discusses the effect on V-belts of oil, water, steam, dust, and chemical fumes.

Other sections in the book include complete easy-to-follow instructions for the design of V-V drives, Quarter-turn drives, Double-V drives, and the V-Flat drives. Copies are available to those interested in power transmission.

PAPER TRADE JOURNAL
ESTABLISHED 1872

15 West 47th St., New York, N. Y.

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Editor

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Price, Per Copy, 10 Cents — United States, Per Annum, $4.00
Canada, including tax, $7.50; Foreign Countries in Postal Union, $6.00

Member Audit Bureau of Circulations

Vol. CI — New York, August 1, 1935 — No. 5

THE NRA PAPER SURVEY

The announcement of a paper survey to be conducted by the NRA under the direction of Mr. E. C. Popp has naturally aroused considerable interest in the paper industry. No definite details, however, of the survey are as yet available, though it is known that some preliminary work has been done in the way of drawing up a tentative outline for such a study. According to word from Washington, it is to be thoroughly understood that this proposed outline which is being held very confidential, has not been officially approved and may not be in its entirety.

The proposed outline is divided into six main divisions consisting of (1) the scope and character of the industry, (2) prices, (3) labor, (4) financial aspects, (5) industrial administration and control and (6) the NRA and the paper industries.

These six main divisions are then divided up into many subdivisions. For instance under the scope and character of the industry come such subheads as the scope, including number of establishments etc., products including classification and the character and products of the industry. This same subsection takes up also consumption, distribution, and extraneous factors influencing the industry.

Under the subdivisions of prices comes the history, buying and selling practices and terms, the influence of foreign prices and the code period.

Under the general heading of labor, comes employment, hours and wages, organization of labor, and welfare activities.

Taking up financial aspects the proposed study wants to take up cost structure, capital structure, and profits and dividends.

Under the general heading of the NRA and the paper industries the study wants information on the code provisions, pre code, code, and post code status of the industry, and evaluation.

It is pointed out in the proposed outline that the paper industry presents certain special problems, among the most important of which are: price rigidity, intercorporate relationships and financial control, intra industry competition, foreign competition, regularization of employment, and production and price control schemes.

In addition to all of these titles and subtitles the proposed outline goes into considerable detail in each instance.

For instance under the extraneous factors influencing the industry it is suggested that the tariff in the newsprint situation is of interest as well as forest conservation programs, the problem of making the United States self-sufficient in supplying pulpwood and the utilization of waste forest products.

It is reported that some of the NRA officials have taken the attitude that the proposed "study" is not a study at all but an "investigation." It has also been stated that some parts of the proposed plan are rather "radical" and that it will be very materially changed before it is approved.

While it was originally reported that some fifty-four persons would be employed on the survey, it is now said that this number will be very materially scaled down before the study is undertaken.

FACTORS IN STRENGTH AND STABILITY OF RAG WRITING PAPERS

The results of a further phase of the papermaking studies being made at the National Bureau of Standards to relate the papermaking materials and processes to the strength and stability of papers, are reported in the Bureau's Research Paper 794, which appeared in the June number of the Journal of Research.

Papers were made in the Bureau mill by the usual commercial processes, and under carefully controlled conditions, from a mixture of new rags and a mixture of old rags secured from the stock of a commercial mill. In addition to the usual chemical and physical tests, the papers were tested for stability by heating them for 72 hours at 100° C.

The tests gave further evidence of the importance of considering the cellulosic purity of fibrous raw materials in manufacturing papers to be used for record purposes. The new rags had a higher degree of cellulosic purity and were stronger than the old rags, and these differences were reflected in the papers. When made under the best conditions, the new-rag papers were very strong and stable, while the old rag papers were less stable and weaker. The cellulosic purity of the fibers in the rags was improved somewhat in the cooking and bleaching operations but did not change materially.

Additional data showing the necessity of careful control of the rosin-sizing operation were obtained. If too much acid alum was used the papers were unstable; at 5 pH acidity the papers were stable and good sizing was secured. Of papers of the same acidity, those having the lower content of rosin were the more stable. All of the rosin sized papers yellowed under the heat treatment. With

increasing amounts of alum and rosin, the folding endurance of the papers was decreased somewhat. Starch sizing used in the beater apparently had no deteriorative effect.

Glue and starch were used to surface size the papers. They increased the strength of the papers but the gain in strength was largely lost in the heat test. This sizing treatment had little effect on the stability of the papers but it appears to have provided a protective coating which retarded chemical deterioration of the less stable papers.

The Bureau remarks that these findings apply only to the particular processes and rags used; different rags or modified manufacturing processes might give different results. It also takes occasion to remind the reader that the best paper cannot long endure unless it is protected from adverse external deteriorative influences as recommended in its publications on that subject.

Paper Directory of All Nations

The 1935 edition of the Paper Makers' Directory of All Nations has just been issued by Dean & Son Ltd., London, England. The volume is cloth bound, and contains over 1000 pages.

The international character of this Red Book of the Paper Industry (now in its 44th annual issue), renders it of special interest to all those who are engaged in the production, purchase, sale or distribution of paper, pulp and board, in the equipment of mill or factory, or in the supply of raw material in connection with the paper and allied trades, while the alphabetical nature of its arrangement makes it particularly easy of reference.

It contains particulars of the paper and board mills in Great Britain and Ireland and similar details concerning the paper, pulp and board mills overseas and in 50 foreign countries; many useful lists, such as those of British Wholesale Stationers and Paper Merchants, British Waste Paper, Rag and Paper Stock Dealers, British Cardboard Box Manufacturers, China Clay Producers and Merchants, Paper Bag Makers, Paper Agents (with mills they represent), Export Merchant Shipper of Paper, etc.; a comprehensive list of Mill Productions, arranged alphabetically in three ways, (1) class of Goods manufactured under more than 400 Trade headings, (2) country of origin, (3) name of firm; Classified Index forming Buyers' Guide. The Paper Makers' Directory of All Nations may be ordered from the Lockwood Trade Journal Company, 15 West 47th Street, New York.

Russia May Benefit from Swedish Agreement

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 29, 1935—For the first time in 18 years the United States has reached a trade agreement with Soviet Russia which will entitle that country to all of the trade concessions which any other country obtains through its reciprocal tariff agreement with the United States. In return the Soviet government has pledged itself to spend some $30,000,000 in this country during the next twelve months which is said to be about twice as much as was spent during the past year.

It is believed that Russia may benefit, from the Swedish agreement since it binds on the free list three types of wood pulp. An agreement is now being negotiated with Canada, which is expected to deal with other types of wood pulp which may also benefit the Soviets.

Weekly Production Ratio Report

Reports to the American Paper and Pulp Association show the following Over-All Production Ratios for the designated periods.

	Reporting Mills		Total Production Ratio
	Number	Capacity	
September, 1934	292–299	.....	59.4%
October, 1934	297–394	.....	64.7%
November, 1934	385–399	.....	61.7%
December, 1934 (a)	396–404	.....	62.1%
January, 1935	397–411	.....	65.8%
February, 1935	407–409	.....	70.0%
March, 1935	406–408	.....	70.5%
April, 1935	405–407	.....	70.0%
May, 1935	375–407	.....	69.4%
June, 1935	353–374	.....	72.3%
*Week ending July 6, 1935 (b)	350	122,268	58.6%
*Week ending July 13, 1935	338	141,437	69.3%
*Week ending July 20, 1935	266	109,127	69.6%

Statistics showing the number of mills reporting by ratio groups are given below:

	Number of Mills Reporting		
	Week ending		
Ratio Limits	July 6, 1935	July 13, 1935	July 20, 1935
0% to 50%	184	118	93
51% to 100%	166	220	173

* Subject to revision.

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours" were as follows:

	September, 1934	62 per cent
	October, 1934	63 per cent
	November, 1934	56 per cent
(a)	December, 1934	53 per cent
	January, 1935	61 per cent
	February, 1935	67 per cent
	March, 1935	67 per cent
	April, 1935	61 per cent
	May, 1935	61 per cent
	June 8, 1935	61 per cent
	June 15, 1935	65 per cent
	June 22, 1935	65 per cent
	June 29, 1935	69 per cent
	July 6, 1935	39 per cent
	July 13, 1935	63 per cent
	July 20, 1935	68 per cent

(a) Capacity and percentage data exclude December 25, 1934.
(b) Capacity and percentage data exclude July 4, 1935.

Revised statistics covering delinquent mill returns will be shown in later reports.

Accept AAA Newsprint Amendment

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 29, 1935—The Senate in passing the amendments to the AAA accepted both of the amendments introduced by Senator Lonergan, of Connecticut, asked for by the A.N.P.A., one dealing with newsprint paper and the other with advertising.

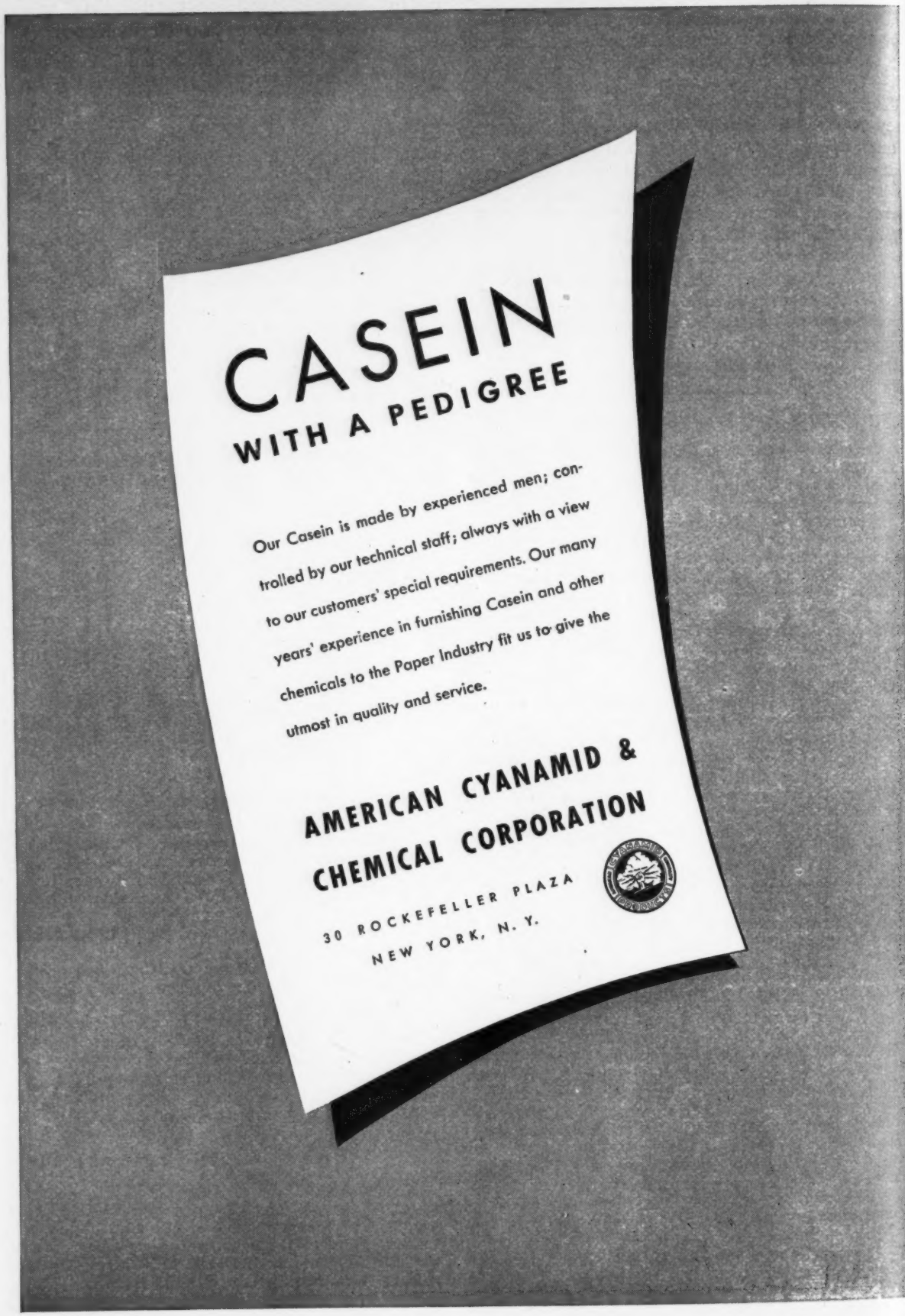
The newsprint amendment as adopted without debate is as follows:

"Provided, that no such tax shall be levied upon the processing of any commodity into newsprint." The advertising amendment as adopted reads as follows:

"No order shall be issued under this act prohibiting, regulating or restricting the advertising of any commodity or product covered hereby, nor shall any marketing agreement contain any provision prohibiting, regulating or restricting the advertising of any commodity or product covered by such marketing agreement."

Pratt & Austin Chartered

HOLYOKE, Mass., July 29, 1935—Pratt & Austin, Inc., has been incorporated to deal in envelopes and paper products, with a capital stock of 200 common shares of no par value. F. Raymond Austin is president; Leonard Pratt, 128 Fountain street, Springfield, Mass., treasurer, and Ethel J. Austin the third incorporator.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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Paper Specialties

Flexible Glazed Paper. Alva W. Bateman and Raymond E. Thomas assignors to E. I. du Pont de Nemours and Co. U.S. pat. 1,954,751 (April 10,1934).—Paper is provided with a coat of a thermoplastic cellulose derivative composition such as a composition containing cellulose nitrate and with an overlying coating a fatty oil-modified polyhydric alcoholic-polybasic acid resin.—A.P.-C.

Artificial Fabric Impregnated with a Synthetic Resin and Suitable for Bookbinding, Wall Covering, Etc. Walter E. Lawson assignor to E. I. du Pont de Nemours and Co. U.S. pat. 1,953,083 (April 3, 1934).—A flexible material of high resistance to tear and exhibiting no paper break comprises a web of artificially crinkled cellulose material such as a paper web impregnated with a vinyl-ester polymer such as polymerized vinyl acetate.—A.P.-C.

Apparatus for Decorating Webs of Material Such as Paper, Etc. Russell S. Bracewell assignor to The Marvellum Co. U.S. pat. 1,968,279 (July 31, 1934).—The invention relates to the process of applying colored designs to paper by depositing a colored liquid on top of a perfectly smooth, unrippled body of water slowly moving through a trough, and bringing the web (moving at the some speed as the water) into just sufficient contact to transfer the color solution to the web. The color solution is deposited on the water surface by flowing it gently down an inclined baffle surface dipping very slightly below the level of the water. If it is desired to obtain a variegated color effect, differently colored solutions are flowed down two or more baffles, the first of which touches and the others slightly clears the surface of the water.—

Method and Machine for Making Laminated Paper. Robert F. Nelson assignor to The Glassine Paper Co. U.S. pat. 1,965,719 (July 10, 1934).—The invention provides a machine for making a two-ply glassine with intervening film of paraffin wax as described in C. E. Beecher's U.S. pat. 1,936,373 of November 21, 1933.—A.P.-C.

Treating Writing Paper to Prevent Alteration of Documents. Frank S. Wood assignor to Inkset Safety Paper Co. U. S. pat. 1,951,076 (March 13, 1934).—A composition for treating writing paper adapted to produce a stain and set the ink on ink eradication is formed with tannic acid 1 grain, decolorized tincture water.—A.P.-C.

Process of Making Safety Paper. Frank. S. Wood. U.S. pat. 1,964,791 (July 3, 1934).—A "chemical inkset" composition made up of potassium ferrocyanide and potassium carbonate dissolved in water is added to a web of paper so as to give a moderate alkalinity to a normally acid paper and varying in proportions with different grades and colors of paper, but which not only impregnate the paper with inksetting power but also sizes the paper to the degree required for a good writing surface.—A.P.-C.

Glycerinated Paper. George A. Richter assignor to Brown Co. U. S. pat. 1,964,793 (July 3, 1934).—A three-ply paper is formed on a cylinder machine, the central ply being glycerinated and the outer piles substantially free from glycerine.—A.P.-C.

Process for the Manufacture of Moistureproof Cpaque or Transparent Paper. Eugène Sonnenfeld. U. S. pat. 1,964,862 (July 3, 1934).—Rubber or oils, fats and waxes of mineral, vegetable or animal origin and (or) their derivatives are worked up into plastic masses with cellulose esters and (o) ethers and plasticizers which are then incorporated in a finely divided condition with the stock during or after beating.—A.P.-C.

Plastic Wax Board Liner. Daniel M. Gray assignor to Hazel-Atlas Glass Co. U. S. pat. 1,968,140 (July 31, 1934).—About 12 to 14 parts of pale crepe plantation rubber are dissolved in 88 to 86 parts of paraffin at as low a temperature as possible, and pulp board is coated by dipping in the viscous mixture. The product is suitable for liners for bottle and jar closures.—A.P.-C.

Stiffening Sheet Products Such as Leather Substitutes. Willis A. Boughton assignor to Bennett Box Co. U. S. pat. 1,968,437 (July 31, 1934).—Short and stiff fibrous material (*e. g.*, undercooked long leaf pine pulp) in matted sheet form is impregnated with a high-ratio sodium silicate solution to give a product suitable for the boxes for shoes, linings for suitcases and trunks, etc.—A.P.-C.

Paper Manufacture. Leon M. Yoerg assignor to American Writing Paper Co. U. S. pat. 1,969,592 (Aug.

7, 1934).—A surface-hardened paper is obtained by passing the paper (either partly or completely dried) on the paper machine through a glue- or gelatin-sizing tub and then over (but not in direct contact with) a heated roll or plate on to which formaldehyde is sprayed.—A.P.-C.

Manufacture of Fiber Products. Treadway B. Munroe and Marion D. Coulter. U. S. pat. 1,968,418 (July 31, 1934).—Waterproofing, fungicide, etc., substances are added to a small fraction of the furnish at a relatively high consistency, *e. g.*, 4 to 5%, which is then added to the remainder of the furnish.—A.P.-C.

Paper of Increased Opacity. Albert B. Hurley assignor to National Paper Process Co. U. S. pat. 1,969,707 (Aug. 7, 1934).—The opacity of a web of white print paper is increased by completely covering one or both sides from edge to edge and in continuity of pattern lengthwise with a normally invisible but light-resisting tinted screen or checkerboard, with interposed uniformly distributed white areas sufficient in their aggregate area to preserve the appearance of a white surface, while the absorption of light by the screen is sufficient to substantially increase the opacity of the paper.—A.P.-C.

Forming Thin Pressed Fibrous Articles Such as Dishes or Food Containers from Wood Pulp. George J. Manson. U. S. pat. 1,951,940 (March 20, 1934).—A large amount of water is first expelled from the stock while cold by simple pressure and passage of air transversely through the material, and subsequently the article formed is subjected to a further drying by heat and under mechanical pressure while simultaneously subjected to suction. A wax emulsion is used for waterproofing.—A.P.-C.

Pulp Yarn or Twine. George A. Richter assignor to Brown Co. U. S. pat. 1,969,095 (Aug. 7, 1934).—Pulp yarn or twine having a higher wet strength than dry strength is obtained from a furnish consisting of chemical wood pulp with 50% or more of long-fibered pulp (*e. g.* ramie, cotton, rayon, etc).—A.P.-C.

Method of Producing Perforated Paper. John F. Hawley assignor to Central Waxed Paper Co. U. S. pat. 1,965,893 (July 10, 1934).—The patent covers various mechanical features of an apparatus and method for centering predetermined portions of paper being prepared for use such as packaging and for providing indicia and grip apertures for a subsequent operation on the paper.—A.P.-C.

Experiments to Obtain Spun Garn Fibers Directly from Wood. Leopold Enge. Zellstoff U. Papier 13, No. 6, 275-76 (June, 1933).—In order to make the German textile industry independent in case of war, experiments have been made to manufacture spun garn fibers direct from wood. A resume of the patents taken out from 1890 to the present time is given but so far nothing has become of these processes.—J.F.O.

The Transparency of Papers from Wood Pulp. Togo. Wochbl. Papierfabr. 65, No. 34: 604-05 (Aug. 25, 1934). —Materials used for loading and certain other fibers not produced chemically from wood pulp increase the opacity of papers. The degree of cooking of sulphite pulp has little effect on the opacity of the finished paper but a pulp that is way undercooked increases opacity. The more a sheet is pressed before the dryers, the less the opacity. And a preponderance of short fibers gives a more opaque sheet.—J.F.O.

Process for the Manufacture of a Water-Proof Paper or Carton, Free from Fillers and Containing Vulcanized Caoutchouc. Antonio Ferretti, Mailand, Italy. Ger. pat. 598,846 (March 22, 1931).—Caoutchouc milk and a vulcanizing material together with a corrosive are added to the stock in the beater. The order is as follows, first the fiber is furnished to the beater, then the corrosive, a part of the vulcanization material, the caoutchouc milk, a coagulation means, an anti-oxydation means and finally the remainder of the vulcanization material.—J.F.O.

Kraft Paper. Zellstoff U. Papier 14 No. 2: 57-59 (Feb., 1934).—A complete description of the manufacture of the various kinds of kraft paper on different types of machines is given. For example, the author mentions five different methods for the preparation of the stock depending on the size of the output and type of paper machine. Operating data on the paper machines are also given and in conclusion the author gives the specification of the different kinds of kraft paper.—J.F.O.

Process for the Manufacture of Cigarette Paper and a Gummed Paper for Damaged Cigars. Otto P. Kohre, Bad Durrenberg. Ger. pat. 598,550 (March 24, 1931).—Ordinary cigarette paper is drenched in a solution of cooked flour and water. This treatment improves the combustibility of the paper and yet does not produce any odor of burning.—J.F.O.

Process for the Manufacture of Cigarette Paper. Firma Papeteries de Malaucene, Lyons, France. Ger. pat. 599,264 (May 19, 1931).—Ordinary cigarette paper containing 18 to 20 per cent calcium carbonate is drenched in a solution of sodium oxylate, so that 1.5 to 2 per cent of salt remains in the paper. This helps prevent the cigarette ash from breaking loose.—J.F.O.

Process for the Manufacture of Large Plates and Similar Objects from Wood Fibrous Materials. Xylotin A. G. Hhusis, Switzerland. Ger. pat. 596,580 (Dec. 8, 1931).—Method of pouring and pressing the fibrous materials.—J.F.O.

Concerning the Change in Ultra Violet Absorption of Parchment Paper in Sun Light. H. Sommer and J. Becker. Zellstoff U. Papier 13, No. 7; 335-37 (July, 1933).—Parchment paper, which has been specially treated to absorb the ultra violet rays which are detrimental to certain foodstuffs, has shown that after a period of time, this absorption of the ultra violet rays ceases and the paper tests the same as the untreated.—J.F.O.

Printer and Paper

Investigations Concerning the Reactions Between Paper and Printing Ink. J. Bekk. Svensk Pappers-Tidn. 37, No. 14:442-444, 447-448, 453-455 (July 31, 1934).—The article discusses the various properties of paper and inks which have an effect on printing. An apparatus is described for studying the absorptive capacity of paper for various inks. This is more detailed than earlier articles by the same author.—C.J.W.

Removing Static Charges from Paper. J. A. Culler. Nat. Printer Journalist 52, No. 9:21 (Sept., 1934).—The article discusses the limits of effectiveness of a method for removing static electric charges from paper, by passing the same over or near a wire kept hot by an electric current. When sheets holding opposite charges of electricity are in close contact, the charges are bound and cannot be removed. A sheet holding a negative charge will be discharged when passed over a wire at a dull red heat, while a sheet holding a positive charge will only be discharged when passed over a wire at nearly white heat. The high temperature will neutralize both kinds of charges. The paper should pass as close as practicable to the hot wire; for many purposes, however, it will be sufficient to remove only the negative charge.—C.J.W

The Bewoid Sizing System*

By Bruno Wieger[1]

For more than 100 years the paper manufacturer has sized his papers with rosin soap, i.e. with alkaline solutions of the pine rosin, also called colophony. Illig is the master who discovered this epoch-making method of making paper water repellent which was previously possible only by surface sizing. Before him the forming of the sheet and the sizing were two separate successive operations. Illig succeeded in reducing these two operations to a single one. Since Illig only the quantity of alkali which was used for dissolving the rosin has remained the object of discussion in the field of rosin sizing. Würster endeavored to use as little alkali as possible, or expressed in other terms, to leave as much rosin as possible unsaponified. This effort lead to the formation of the well-known "free rosin theory." On the other hand, processes for completely saponifying rosin tended in the opposite direction as they recommended a complete or almost complete "dissolution" of the rosin. Inasmuch as each paper manufacturer obtained his experience in the practical mill operations, he selected the process apparently most favorable for his conditions.

In the development of beater sizing the Bewoid process has resulted in a fundamental change of direction, in that it departed from the soap emulsion hitherto used and went over to the emulsion builders and emulsion carriers. I might designate the Bewoid process as a mechanical colloidal chemical dispersion of molten rosin, in which it has not yet been proved whether the emphasis is to be laid on "mechanical" or "colloidal chemical." The process is performed in practice by allowing a solution of casein to run into molten rosin while being stirred vigorously, during which time the dispersion temperature is of the greatest importance. No saponification takes place, wherefore the process is suited also for substances which do not form soluble soaps, i.e., paraffin, asphalts, pitches, waxes, etc. In general the process is applicable to all fusible, water- resistant substances. The dispersion temperature must lie, as the patent states, between the drop point and the point of solidification. Accordingly the process extends to all substances in which this temperature interval lies within limits which may be reached in practice. Lorenz reports in his treatise—"Theorie und Praxis der Harzleimung" (Theory and Practice of Rosin sizing) about the dispersions of rosin for beater sizing by means of the colloid mill, and yet its principle of operation does not seem to have worked out profitably in practice, probably because of the rapid wear and tear of the high-speed colloid mill, the agitator speed of which often reaches 12,000 revolutions per minute.

Not a Colloid Mill

The Bewoid process operates with an agitator rotating 200 to 300 r.p.m. and disperses 440 pounds of rosin in about 20 minutes with an expenditure of 10 kw. of energy. This shows that the Bewoid disperser is not to be compared to a colloid mill. The dispersions obtained have a pure white to a yellowish appearance, according to the type of rosin treated. They are permanently liquid with a water content of 55 to 60 per cent and are easily distributable in cold water. The particles of rosin show a ball formation of a rather uniform diameter in the magnitude order of about 1 mu. under the microscope. Accordingly, these rosin particles are of the same order of magnitude as the free rosin phase of a high, free rosin size.

Fig. 1 shows the diagram of the Bewoid apparatus for an output of 220 pounds of rosin each hour in a double-decker arrangement. In the upper deck the Bewoid disperser hangs from the top. It is filled with chunks of rosin and heated with high-pressure steam.

As soon as the rosin is melted, the dispersion takes place. The hot dispersed material is passed off into a storage tank which must be large enough to hold the required amount of size at 40 per cent consistency for 24 or 48 hours. The dispersed size can be applied at once. The storage tank can be set directly in the beater room. It is connected to a closed measuring container, in which the quantity of rosin for a beater is measured off each time and flushed into the beater by means of water pressure.

By the elimination of the large size storage tanks the space requirement of the entire plant is reduced to a minimum. It can be easily attended to by one operator.

Advantages Claimed

From practical results observed in about 170 plants in Europe and abroad, it is demonstrated that Bewoid size

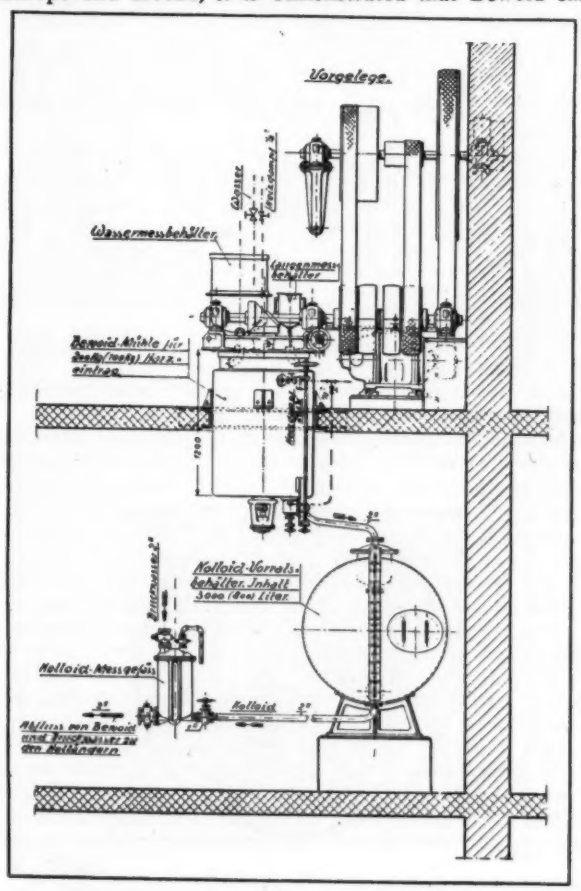

FIG. 1

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18 to 21, 1935.

[1] This paper is a translation from the German. Dr. Wieger is the technical advisor to the American Bewoid Company which is associated with Bulkley, Dunton & Company, New York, N. Y.

is not influenced by variations of the beater operation. Neither the hardness of the water nor the degree of acidity of the return water seem to have any influence upon the sizing and it is also immaterial in which order rosin and alum are added to the stock.

Three factors are of importance for a sizing process from the economical point of view. (1) The cost of sizing, (2) the qualitative influences of the sizing materials on the paper, and (3) the influences of the sizing materials upon the paper machine.

It is to be remarked with reference to the costs of sizing that on the average of about 170 mills, which have thus far introduced the Bewoid process, the raw material savings amount to about 25 per cent rosin and 40 per cent alum. These savings were primary decisive factors for the progress of the introduction of the process. In my opinion points 2 and 3 are not less important.

Great improvement in the finish and character of the paper has been reported in nearly every case. Fuzz formation is eliminated. This is particularly noticeable in M.G. and groundwood papers.

Owing to the snow-white shade of the colloid the shade of even pure rag paper is brightened with consequent savings in dyestuffs and bleached stock. Other sizes tend to dull the shade of the paper.

Papers sized with Bewoid contain no alkali and a minimum of acid and have great durability. The same factors account for the increase in the strength of the paper.

The absence of rosin soap insures freedom from foam and consequent freedom from foam marks and breaks on the paper machine. A sheet of paper sized with Bewoid is generally closer and has a better "look-through" than when sized with rosin soap.

The non-sticky nature of the colloid keeps the cylinders, wires and felts, clean and prevents any sticking of the paper to the press rolls, even when insufficient aluminum sulphate is used.

In places where the fresh water is hard the excess of alum required with rosin soaps often causes the formation of a crystalline aluminous deposit which blocks up the wires and necessitates the use of acid for cleaning. Bewoid size has been proved to offer a complete solution of this difficulty, and in these cases the length of life of paper machine wires and strainers is often increased by as much as 20 to 50 per cent.

It is not generally realized what a destructive effect the excessive use of alum normally causes to paper. Mills which have adopted the Bewoid process have invariably found a very big improvement.

Another important advantage of the Bewoid process is the small amount of space it takes. Only a few square yards are required. Bewoid is always ready for the beater with a rosin content of 45 to 50 per cent. Only small volumes are, therefore, required at any time. The sizing time is shortened and the cleanliness is increased.

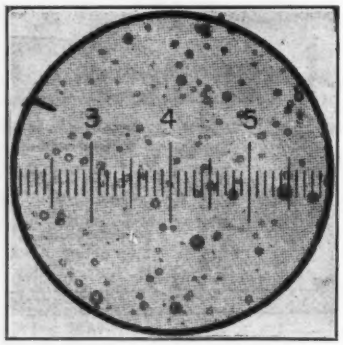

FIG. 2
Dispersion (Eine Skaleneinheit = 1 Mü)

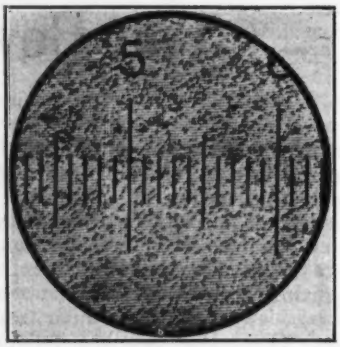

FIG 3
Koagulat (Eine Skaleneinheit = 10 Mü)

Sizing Theories in the Light of the Bewoid Process

The Bewoid process has thrown a piercing light upon the sizing theories and has thus contributed to the scientific elucidation of the sizing process.

THE MEMBRANE THEORY

Scientific theories embrace the causality of empirical facts. They are logical conclusions from a considerable number of facts, as far as these give evidence of common causes. Do our sizing theories fulfill this requirement?

Let us take the "membrane theory," with which some insist upon explaining the sizing effect. It states the principle, that beater sizing is based upon the formation of a water-resisting (hydrophobe) membrane on the fiber possessing the property of swelling (hydrophile).

Let us assume that we would know a method of encasing the water-containing fiber with such an envelope. How would this behave in the process of paper making?

1. It would have to prevent the dyeing of the fiber itself, or at least render it more difficult.

2. The pressure of the steam generated in the fiber during the drying process would necessarily have to explode the membrane, or, if the latter resisted the pressure, the fiber would have to retain the water.

3. The fiber shrinks during drying. The membrane could not follow this reduction of volume in the same measure, it would have to loosen itself from the fiber at least in part.

4. The far greater elasticity of cellulose compared to rosin would quickly entail, under mechanical stress, the loosening of the membrane and its destruction.

From this it already follows that a hypothetical "membrane" cannot be the cause of the sizing, because such a membrane does not remain intact in the entire paper process. In spite of this, this theory still enjoys general acceptance, as J. Strachan emphasized in his paper on "The Bewoid Process and the Theory of Rosin Sizing" in the Paper Maker and British Paper Trade Journal of September, 1931, page 63.

If such a membrane formation is at least conceivable in the case of rosin soap with the voluminous gel-like rosin precipitation, this is an absurd conception in the case of the Bewoid process (Abbreviation for B. Wieger Dispersoid), as the Bewoid size consists of comparatively uniform balls, which do not change their form and size even by coagulation and also do not form any gel.

Sizing with 100 per cent Bewoid size on the weight of the fiber gives no indication of a complete coating of the

fiber when examined under the microscope. The fact that the Bewoid size contains only optically soluble rosin particles makes it possible for the first time to follow the sizing phenomena under the microscope.

A series of photomicrographs of my Bewoid rosin dispersions show the nature of the particles. Fig. 2 shows the usual Bewoid dispersoid as it is produced for sizing in practice. Fig. 3 shows the coagulate of the same. Every individual rosin particle is recognized as a well-formed ball of a polydispersoid of non-uniform particle size, ranging between 0.5 to 2 mu. It is further seen that the coagulation does not change the size and form of the particles, and yet they are no longer uniformly distributed in the field of vision, but appear to be in groups without any connection. The coagulation picture shows mainly that no formation of flocs occurs.

The particles show a vivid molecular motion and had to be embedded in gelatine for photographing. According to the order of magnitude of the particles we have to do with dispersoids, which lie in the border line between colloids and suspensions.

The counting of the particles by illumination and in the dark field gives approximately corresponding results, from which it appears that the Bewoid size does not contain in practice any particles substantially under 0.1 mu. It is true that the dark field shows some clear bright spots, but this is to be explained by the dispersion of the protective colloid.

On the other hand, it also contains particles over 2 to 6 mu. The dispersions can be separated into homodispersions of more or less equal size which is, however, not applicable in practice and is unimportant. Fig. 4 gives the picture of 3 per cent size on the weight of the fiber and Fig. 5 that of a 10 per cent size. There is no trace to be found of a membrane.

Attraction Forces Between Fiber and Rosin

The second main thesis of beater sizing concerns itself with the attraction forces taking place between rosin and fiber, and states: "As the negative rosin cannot unite with the negative fiber there is required the transformation of the fiber from negative to positive, which is affected by the positive aluminum ion from alum. I have pointed out the unlikelihood of this thesis on a former occasion. It must first be ascertained that the cellulose fiber is not negative, but positive, and that it, therefore, does not require transformation.

The cause of the coagulation is always an electrical discharge. With it the electric charges theory also falls, at least in the form in which it has been held up to this time.

It is not possible to deny that certain forces exist between fiber and rosin and that they are released by means of aluminum hydrate, but an explanation must be sought which is not in contradiction to the facts.

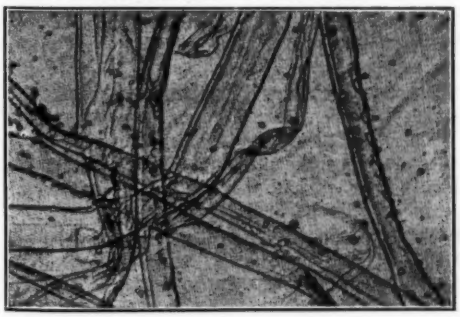

Fig. 4

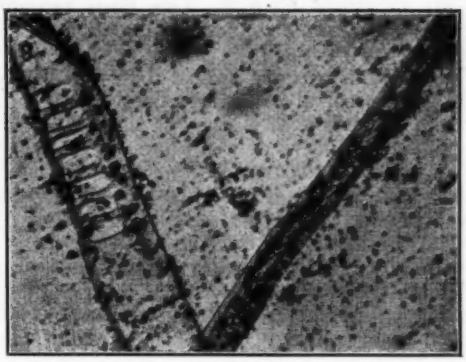

Fig. 5

The important role of aluminum oxide, in many points still unexplained, must, after all, be based on its chemical nature. Aluminum is a very weak base, the salts of which are strongly split up hydrolytically. The separation of alumina hydrate is, in the first place, colloidal with gel formation. The colloidal aluminum oxide must cling to the base with unusual strength, upon which it precipitates. This must be inferred from the strong mordant effect which has given it such great importance in dyeing.

Rosin and cellulose as a hydrophobe and a hydrophilic colloid have no similarity whatsoever. But this may, of course, be changed by coating both with a layer of aluminum oxide as a mordant.

Strachan also assumes mordanting of the fibers and pictures the fiber as being surrounded by a semi-permeable film of alumina hydrate, which is supposed to prevent the intrusion of the rosin into the interior of the fiber, and there becomes lost in so far as the sizing effect is concerned. He makes a report in this connection in the Paper Maker and British Paper Trade Journal (Nov. 2, 1931). This auxiliary idea is somewhat forced and in my opinion is superfluous. If we consider the pores of the fiber it is hard to consider this closed up by means of a film of aluminum oxide. If a mordant layer is formed on the fiber, then certainly it is formed in the interior of the fiber exactly as on the outer surface. This mordant layer is the carrier of the dyestuffs the same way as it is the seat of the binding force of the particles of rosin.

The Bewoid Theory

I have come to a definite conclusion that the rosin particles must also be mordanted and that sodium plays a part in the mordanting of the rosin particles. As I have already reported in the Wochenblatt fuer Papierfabrikation, (Biberach-Riss 1931 No. 26), it is not possible to obtain a sizing with an effectively 100 per cent dispersoid. One portion (no matter how small) of the rosin must exist as alkali resinate. The individual parts of the dispersion consist, therefore, of a solid solution of sodium resinate in rosin. The surface of the balls has, therefore, a sodium-content, and the sodium transforms into alumina hydrate in direct proximity to the surface of the ball, i.e. an intensive mordanting is effected by the small quantity of sodium. If this sodium is missing on the surface of the rosin ball, no sizing is caused by the alum surplus, from which it readily follows that the mediation of the alkali is absolutely necessary. This fact, which was first found from the technology of the Bewoid process, is an important key to the scientific explanation of the processes of sizing.

If the cause of the bonds between rosin and fiber is once determined, all the details of the phenomena of

sizing are explained from it. One must recognize that sizing is by no means a complete elimination of the capillary absorbency of the fiber structure, but only an accumulation of obstructions against the speed of the water flow in the individual capillary spaces. This delay is a measure of the degree of sizing. If we assume two fibers to be parallel cylinders at a distance of 1 mu, between which at any point a particle of rosin of 1 mu is found, it is clear that the water absorbed into the capillary can advance only as far as the particle of rosin. But the fiber swells by means of this water and carries it around the obstruction. If the obstruction is removed after a certain time, the water quickly flows further to the next obstruction. The more of these obstructions that are present in each capillary chamber the greater the degree of sizing.

This process can be very clearly observed in two glass plates which touch each other at one edge, hence forming a capillary chamber. If the plates are free from grease, the water at once rises to a certain height. But if a speck of grease is placed upon one of the plates at a point of contact of the plates, the water rises first to this, but gradually runs around it, but in overcoming this obstruction continues to rise further.

The size of the particle of rosin is of importance, that is, the size of the discharged, i.e. coagulated particle. This floc formation from rosin soap is in fact a well-known one. But in the case of the Bewoid no floc formation is connected with the discharge, as each rosin particle keeps its original size The coarse flocs effect an irregular deposit in the capillary chambers. Some are overloaded with it, others receive no deposit at all and remain unsized, that is they require additional size addition. This explains the economical effect of the free rosin sizes, since in these the free rosin phase does not partake in the growth of the flocs, and it explains also the saving effected by the Bewoid exceeding even the free rosin size.

Paper Capillaries

The idea of the capillary nature of the paper must finally also explain the differences between the surface sizing and internal sizing. The paper contains two kinds of capillaries, in the first place the canals of the fibers themselves, and the intermediate spaces between the fibers. As nearly all fibers lie in the paper plane, the capillary tubes are of importance in surface sizing. Through severe beating the canals are partly destroyed; that is, they fill themselves with disintegrated cellulose which contracts the capillaries on drying. It has been shown as a fact, as also by Strachan, that free stocks can be sized best with Bewoid. This is entirely understandable from the size of the Bewoid particles, since the particles of 1 mu can enter the tubes with ease, which is not possible for the coarse flocs. It must be much easier to stop the interior capillarity of the cells than their outer capillarity. It is for this reason that tissue paper may be given a surface sizing, but no depth sizing.

The Rosin Sintering Theory

The third sizing theory refers to the processes of drying on the paper machine and states that the rosin enclosed during the sheet formation must also be subjected to heating at a certain moisture content whereupon rosin is sintered. It is therefore necessary to heat to the sintering temperature of the rosin. The rosin is supposed only to sinter but not to fuse.

How does this assertion stand with reference to the facts, namely, that air-dried papers are also sized, and on the other hand, that for sizing substances may be used, such as waxes, the melting point of which are far below 100 deg. C.

In sizing with rosin soaps the rosin precipitates as hydrate in a voluminous form in which perhaps water is bound in gel-like manner. In the drying process, first the gel water and then the hydrate water would split off. Whether the rosin in the paper exists finally as rosin acid or as its anhydride is still unknown. The sintering processes could, therefore, play the part of splitting off of water in sizing with rosin soaps.

The drying of Bewoid size would have to take an entirely different course as the rosin exists as anhydrous rosin in as much as a saponification process has not taken place. The rosin, therefore, reaches the paper at once, in which a small quantity of sodium-resinate is enclosed as a solid solution. Splitting off of water as a chemical process in the drying can no longer, therefore, take place.

It is a fact that the quality and intensity of the drying is not without influence on the result of the sizing. Burning of the sizing is spoken of, which takes place especially in the case of M.G. paper. There are considerable differences of opinion regarding the intensity of the drying in practice. Judging from my own experiences slow drying at low temperature in well-developed drier sections of the paper machines is correct, and this also agrees with the above developed capillary ideas.

Strong currents of water occur during the sheet formation, particularly on the suction boxes. These are, however, not sufficient to loosen the rosin-fiber bonds. Wire and felt sides in M.F. papers show no observable differences in sizing on the surfaces. But on the driers steam currents are generated which also blow through all the capillary spaces. These currents are logically stronger with increase in the water content and drier temperatures. These steam currents are sometimes strong enough to loosen the rosin-fiber bonds and to upset the created obstructions in the capillaries. Through such steam currents a wandering of the rosin particles can be called forth, which goes through the thickness of the sheet. The "burning" of the surface sizing rests upon such wandering, in which the designation "burning" is, however, misleading for a ready dried paper can be heated to a fairly high temperature without any injury to the sizing. These burning phenomena are again an argument against the membrane theory. A hypothetical membrane cannot possibly begin wandering through the thickness of the sheet, as is conceivable in the case of a rosin ball.

Relative Sizability

One last phenomena of the sizing is still to be illustrated it is the different sizing capacity of the different pulps which may be reduced to somethng like the following scale:

1. Kraft pulp unbleached
2. Brown steamed groundwood
3. Kraft pulp bleached
4. Sulphite pulp unbleached
5. Sulphite pulp bleached
6. White groundwood
7. Straw pulp
8. Esparto pulp
9. Rag half-stuff
10. Brown and white groundwood from green wood

The difference between bleached and unbleached pulps is explicable by the destruction of the natural rosin content by means of the oxidizing bleaching action. Whether the rosin content of the unbleached pulps plays a part for the sizing is hard to say for nothing is known about the distribution of this natural rosin content.

A natural acid content of the fiber is of course injurious for the mordanting addition of aluminum oxide. Brown steamed groundwood from green wood is sometimes unsizable.

The differences in sizing ability are therefore shown

in the first place to be based on the different mordanting quality of the fibers. Furthermore, the surface structure of the fibers must play a part. With the more delicate and finer fibers a larger number is contained in one volume unit, and the more capillary spaces are present, which therefore will require different quantities of rosin particles. The coarsest fibers are obtained from kraft pulps which therefore are in the first place on the scale.

Three years ago I published for the first time in "Zellstoff und Papier" No. 1 (1932,) the theoretical ideas just developed. It has not been contradicted up to this time, and I therefore ask the specialists in the United States to criticize my theory. The above described "Theory of the Optimal Sizes of Particles" is not in contradiction to the actual experiences of the practical papermaker. More cannot be demanded of a theory. It confirms not only Würster's free rosin theory, but even imparts to it a scientific definition.

The Mechanism of Dyeing Paper*

By Robert E. Rose[1] and J. Carl Schmidt[2]

Abstract

Paper coloring is shown to be more akin to lake making than textile dyeing. Use is made of the information that has accumulated regarding the mechanics of the dyeing processes of textiles and rayon in explaining the coloring of paper.

At this time it seems advisable to make an effort to utilize information which has been accumulated regarding the mechanics of the dyeing process as it takes place on cotton and rayon in explaining the coloring of paper.

It is necessary, in order to approach the subject logically, to outline the progress that has been made in the case of textile fibers. The theories that have been advanced have been developed in a sequence as our knowledge of organic and physical chemistry improved. In the very early days of chemistry, dyes were attached to cotton by means of mordants and it was very logical to assume that this process was essentially chemical. The aspect of affairs changed completely when it became known that there were water soluble organic dyes which would color cotton vividly from a solution containing only salt. Here the system contained no mordant and it was obvious that in order to be logical and to retain the chemical theory, it was necessary to assume a chemical reaction between the dyestuff and the fiber. However, this was by no means easy because cellulose is inert under the conditions prevailing in the dyebath and the dyestuff contains no groups that might be expected to react with avidity with any part of the cellulose molecule. In terms of physical chemistry the dyebath is a reversible equilibrium characterized by the fact that in the presence of salt the dyestuff is removed from solution and deposited on the fiber. This is not an irreversible chemical change, if it is chemical at all, because the color which goes on can be removed quite readily by increasing the quantity of the dyebath and treating the material with a fresh dyebath. One can in fact remove all the color from cotton by a sufficiently long boiling with a sufficient quantity of liquid of the same character as that employed in dyeing. The process is facilitated by using pure water instead of a solution of salt.[3] This equilibrium is profoundly sensitive to the presence of electrolytes and a pure substantive dye remains in solution in the presence of cotton, except for mere traces, but is deposited extremely rapidly on the addition of even low concentrations of sodium chloride or sodium sulphate. However, if the amount of the electrolyte is pushed above a certain point dyeing no longer takes place and observation shows that the dyestuff is coagulated. This peculiar equilibrium is dependent on the nature of the dyestuff that is its chemical constitution, which in turn determines its physical characteristics. There are plenty of dyes which remain in the dyebath without going on to cotton no matter how much salt is used.

Certainly such an equilibrium should be capable of analysis by physical chemical methods, however, these are not altogether easy to apply and it has taken some years to confirm the original supposition that the direct dyeing of cotton is essentially a physical equilibrium. It has required an advance particularly in the field of cellulose structure to verify this supposition. At present the following hypothesis is that which is generally accepted. It is applicable to the dyeing of cotton, rayon and Cellophane with any of the direct, sulphur and vat colors.

Cellulose is an organic structure of great mechanical complexity. It is to be regarded as a system of macro molecules—chains of units capable of free existence as molecules, held together end to end, and side to side, by residual valences, the residual valences being principally those of the oxygen of the underlying beta glucose unit. The macro molecules are by no means of uniform dimensions. The portions of which they are built have an almost unlimited capacity for attaching themselves each to the other so that it is not surprising to find that some determinations lead to the conclusion that cellulose possesses a molecular weight of 400,000, whereas other experiments give a result as low as 10,000. A useful mechanical picture of this sub-microscopic structure is that of a rope made up of strands differing in length. These strands represent the macro molecules held together by primary valences lengthwise and by residual valences sidewise. Since all the strands are not of equal length the ends give rise to a certain porosity in the structure. The shape of the fiber will be a structure of great length and small breadth, because the micells of which the net-work is composed are about 1000 times as long as they are broad. The attachment of these strands end to end is firmer than that existing laterally and the fiber can swell just in the same way as a string spreads when you force the ends together, because the fibers come apart.

It is necessary to emphasize that these units are not visible even under the highest power microscope. Water will pass through such a structure and if left long enough in contact with it will cause the whole fiber to swell and this swelling is much greater when alkali is present. When

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* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18 to 21, 1935.

[1] Director, Technical Laboratory, Dyestuffs Division, Organic Chemical Department, E. I. du Pont de Nemours, Wilmington, Del.

[2] Member TAPPI, Color'st. E. I. du Pont de Nemours, Philadelphia, Pa.

[3] It is to be noted that dyes fixed with size and alum on paper pulp can not be removed with the ease characteristic of direct colors on cotton. Within a reasonable time the amount of dyestuff removed is negligible in the case of paper dyed with non-bleeding dyes.

a dye is added to the water about such a structure, it will go through it with the water if its particles are small enough. However, it will not enter the ultimate units; it will merely pass through the intermicellar spaces. On the addition of salt the condition may remain unchanged or, if the dye is one of those which we know as direct dyeing, it may attach itself very rapidly to the walls of the fine channels between the micells. This deposition in some cases will not take place freely unless the solution is heated. If the "affinity" of the dye for the fiber is great, practically all of it will settle and the dyebath will be exhausted. A further description of some of the experiments most important to the formulation of this theory will be found in three papers describing work done in the Technical Laboratory of the E. I. du Pont de Nemours & Co., Inc.[4]

Summary of Laboratory Results

The results obtained may be summarized as follows: The substantivity of a dye is associated with its tendency to aggregate and this in turn is a function of typical groups in the constitution of the dye. At room temperatures a dyestuff must possess a particle size less than 17×10^{-5} cm. if it is to be adsorbed by cotton.[5] However, particle size itself is not the sole criterion because two colored substances of the same particle size do not exhaust to the same extent in the presence of the same concentration of sodium chloride. The effect of temperature is most important because it makes possible dyeings with aggregates which are far too large to meet the requirements just stated. There are direct dyestuffs giving rise in solution to micells as large as 48×10^{-8} cm. These become direct dyeing simply because the micells are heat sensitive and at temperatures a little below the boil dissociate to aggregates smaller than 17×10^{-8} cm. This we have been able to confirm in the laboartory by carrying out exact measurements at the boil. The effect of the salt is not alone to make the particles larger but to change the electrical charges characteristic of the equilibrium. The system is one typical of colloidal electrolytes, as such it is extremely sensitive to minor variations in the chemical structure of the dye and of the fiber, as well as that of the electrolyte content of the bath and its temperature.

It is natural to find that cotton does not always dye in the same way, even though analysis shows it to be essentially equally pure. Its structure may be different, but all cotton, except when it is "dead," dyes more nearly alike than any cotton resembles rayon or Cellophane in its dyeing properties. The common feature is merely that all substantive dyes are substantive to cotton, rayon and Cellophane but to a very varied degree. Dyes of very large particle size color rayon more unevenly than they do cotton. In all cases those whose aggregates are relatively large at room temperature coagulate as the dyebath cools and become too large to move out of the intermicellar spaces. They are, therefore, relatively fast to washing when compared with those whose particle size remains small and offers no great obstacle to the migration of numbers of them from the intermicellar spaces to the water used in washing.

How far can this explanation be transferred to the phenomena apparent in the coloring of paper. It is an interesting question and one well worth investigating. In the first place the range of dyes used on paper is much wider than that employed for the cellulose textiles. This is particularly true in the case of the so-called acid dyestuffs. These, as a class, have no affinity to speak of for cotton, although some of them may be said to dye the fiber feebly. Why then is it that acid dyestuffs hold such an important place in the coloring of paper? The equilibrium in the case of pulp of the purer kind, that is, rag, or bleached sulphite, is different from that in the cotton dyebath to the extent that after the addition of the dyestuff two other materials are added, the size and alum, and the conditions are different to the extent that the coloring of pulp is carried out at much lower temperatures without salt and in a very much larger ratio of liquid to solid than in the case of cotton. To analyze these differences and determine what part each plays, it is necessary to proceed cautiously and to reduce conditions to a simplicity that allows of determining each variable. If a laboratory cup beater is charged with regular pulp and water and an acid dyestuff is added at room temperature, the mass agitated and a sheet formed, leaving out size and alum, it is found that most of the acid dyestuffs possess extremely small affinity for this stock. In some cases it is tinted, in others it is almost white but here and there, especially in the case of the reds, the coloring is quite intense. Substituting bleached sulphite makes practically no difference in some cases and in others we find the affinity much poorer, for instance, in the case of the acid blues. Generally speaking, however, it can be said that with few exceptions the affinity of acid colors for rag, bleached and unbleached sulphite stock without size and alum is very small. The exceptions are interesting, particularly because the most outstanding one, Brilliant Crocein FL, Color Index No. 252 is the red which has been found to be outstanding in its resistance to producing a two-sided sheet even at the highest speeds. However, this is not the only reason for a lack of two-sidedness, because Anthraquinone Blue BN, which is also exceptionally good, leaves bleached sulphite stock practically white.[6] A second set of experiments, using the same stocks, but modified to the extent that size was added to all the cups, made it evident that if anything size decreases the affinity of acid colors for pulp. In another series using alum but no size, it was found that the dyeings were essentially as good as those obtained by the ordinary procedure, except that the shade was a good deal different in some cases. These results led one very naturally to a set of experiments in which the color is placed in the necessary amount of water and the alum added to this. This was done and it was found that practically in every case a complete precipitation of the acid color resulted. If the liquid with the separated colored lake was placed in the cup, pulp added, and the dyeing carried to completion, a sheet was obtained which was practically indistinguishable from the usual colored product, except that in some cases it was fuller in others slightly weaker, and in still others differed quite a little in shade.

Another series of experiments in which the dyestuff, size and alum were brought together giving a precipitate, and this precipitated material was beaten with the pulp, resulted in hand sheets which were essentially identical with those obtained by the ordinary procedure. These experiments lead very directly to the assumption that in most cases the dyeing of paper by acid colors is in reality the retention by the fiber net-work of a lake produced by the interaction of the alum and the color, modified more or less by the presence of the highly dispersed colloidal size. It is interesting to consider the nature of this pre-

[4] This does not hold for such swollen fibers as those present in rag and bleached sulphite stocks.
[5] J.A.C.S. 57:497 (1935); 57:504 (1935); Ind. Eng. Chem. 27:20 (1935).

[6] This is an exceptional dye in that its aluminum salt is soluble but strongly substantive to cotton. That is, the addition of alum converts it into a direct dye.

cipitate. In the case of one acid color, namely, Orange II, Neil Gordon and his co-workers have carried out a careful investigation and have been able to show that Orange II forms a definite aluminum salt and it may be that similar salts are produced in a number of other cases. This much is certain, the lakes are not aluminum hydrate tinted or colored by dyestuffs adsorbed upon the gelatinous precipitate. This is an assumption that has been made but it seems to us very poorly founded. It is to be remembered that the acid dyes are the colored salts of very strong acids and it is unreasonable to assume that they, by mere double deposition, followed by hydrolysis, would cause the separation of basic aluminum compounds. The average acid dye is the sodium salt of a sulfonic acid capable of such a high degree of dissociation that this salt has nothing in common with sodium acetate and, therefore, will not tend to produce aluminum hydrate. It seems much more likely that in general the product is a true aluminum salt.

The part played by the size is also interesting. The maker of lakes uses rosin to give him a fluffier product, which enables him to realize a better yield for the amount of dyestuff used. It does not seem that the size does the same thing in the case of paper coloring. This apparently is because the aluminum complex is so finely distributed over the paper that the size does not result in a still finer distribution. It is noticeable, however, that a change in shade is occasionally consequent upon the use of size which can only be because of some modification in the physical condition of the precipitate. For the present the experiments described tend to show that size is of value simply because of its effect on the mechanical characteristics of the sheet.

Basic Colors

Basic colors are used extensively in coloring paper stocks, more particularly those which are not well bleached. Experiments carried out to determine the affinity of basic colors for cellulose in the form of rag and bleached sulphite pulp showed that these dyes vary in affinity from zero to a full shade. Basic brown, safranine, and chrysoidine all show a very marked affinity for cellulose. Methyl violet and victoria green show practically no affinity. Adding size to the beater helps to retain the basic color but if the affinity is not good to start with the improvement is not very striking. Using alum, but no size, the basic colors are kept off the fiber. Essentially this is what would be expected, because basic colors give rise to positive colored ions in solution. These would tend to form resins if the combination was insoluble, on the other hand the presence of alum would prevent the deposition because the solution would be rendered more acid. Using unbleached stocks the situation changes entirely and the affinity of the basic colors becomes extremely good. This is to be explained by the fact that unbleached stock contains lignin which acts as a mordant, holding the basic color very firmly. This is well known in the mill and use is made of the fact that the addition of a small quantity of unbleached sulphite to bleached sulphite stock assists the retention of a basic color enormously.

The dyeing of paper with basic dyes is inherently different from the dyeing with acid colors. It is essentially intermicellar. The dyestuff wanders into the fiber and is deposited where it finds a material with which it forms an insoluble complex. This complex is not retained merely by the net-work of felted fibers but is within them, although in some cases there may be a certain amount of pigment attached externally to the fibers.

Direct Colors

It would be very natural to assume that the class of direct dyestuffs colors paper exactly in the same way as it does cotton, that is by intermicellar deposition. However, it is to be remembered that the conditions are quite dissimilar. The temperature is low, the ratio of liquid volume to fiber is very different and usually there is no salt present. These are conditions which decrease the chance of normal dyeing, on the other hand the fiber is in a very highly swollen condition, its surface is available because the fibers are floating apart, and actual experiments show that this one fact more than makes up for the disadvantageous conditions, and paper stocks beaten with direct colors for more than a very short period of time, take up the dye very completely.

That this is not the whole story is evident from the fact that direct dyes dyed on paper in the usual manner in the mill show far less fastness to light than the same dyes on cotton. Our explanation would be this, the direct colors are adsorbed on the fiber but the addition of size and alum before the adsorption is complete results in the formation of insoluble aluminum salts. These aluminum salts differ in no essential way from the analogous products already described in the case of the acid dyes. Besides aluminum salts there may be other insoluble pigments. A great many direct colors are extremely lime sensitive and if this is so the lime salt precipitates before the fiber is dyed. Experiments to show the effect of size and alum proved that size and alum in the dyebath acted as a complete resist in the case of cotton dyeings using Pontamine Yellow CH as the type. The acid intensity, pH, is not as crucial a determining factor in the case of direct dyes as in the case of acid dyes. It would seem then that this class of dyes attaches itself to the fibers of the pulp just as it does to cotton, if it is given a chance to do so. However, under ordinary mill conditions along with this direct dyeing will go to a greater or less extent, pigmentation depending on the temperature of the beater and the time allowed before the addition of size and alum. From the point of view of the laboratory the best practice would be to allow the maximum possible time before adding the size and alum and to keep the temperature as high as possible in the beater, remembering, of course, that beyond a certain point it is not safe to go because of the effect on the fiber of the stock.

The facts presented in this paper go to show that paper coloring is more akin to lake making than textile dyeing—an interesting point of view which we hope may lead to a better understanding of the whole process.

Middle West To Have Big Straw Crop

DAYTON, Ohio, July 29, 1935—Wheat harvesting is about completed in the Miami Valley and other sections of Ohio. This state will have the largest crop in recent years. Although the wet weather which came late in the season did the growing crop no good, much of the wheat having a wet content which resulted in a reduction in the price at the mills and elevators, it is said the stand was healthier than usual and as a result there should be a fairly good crop of straw.

This fact will interest straw paper and board manufacturers and others who are interested in this industry.

Added to Ohio's bumper crop, equally large crops in the Middle West states which furnish much of the straw for the country—Indiana, Michigan, Kentucky, and parts of Pennsylvania and West Virginia—there should be no lack of raw materials for the paper manufacturers.

The Dependence of Reflectance and Opacity on Thickness; Relation Between Contrast Ratio and Printing Opacity*

By Deane B. Judd[1]

Abstract

Two families of graphs have been prepared from the Kubelka-and-Munk formula. The ordinate is reflectance, R_o, for black backing; the abscissa is contrast ratio, $R_o/R_{o.89}$, for a white backing of 89 per cent reflectance; this is the contrast ratio found by the official TAPPI method for measuring opacity of paper. Each curve of the first family refers to different thicknesses of the same material characterized by its reflectivity, R_∞; it shows the increase in opacity and in reflectance as thickness is increased. Each curve of the second family refers to layers of constant thickness and scattering coefficient; it shows the increase in opacity produced by decreasing the reflectivity of the material (such as by adding dye) and also the attendant decrease in reflectance.

Relations between the incident, reflected and emergent light from a thin, homogeneous piece of absorbing and scattering material have been worked out in various forms*(1)*. These relations have been worked out theoretically by considering the light traveling either backwards or forwards perpendicular to the thin sheet of material; that is, scattering of light to the sides or light lost through the edges of the sheet has usually not been taken into account. Of the various derivations the most readily applicable to practical measurement is that of Kubelka and Munk who carried through the derivation in such a way that the related quantities are those which are customarily measured. This important derivation is reproduced by Dr. Steele *(2)* in his discussion of the application of the relations to paper.

It will be obvious that the assumptions underlying these relations apply closely to paper which is nearly homogeneous and for which edge effects are negligible; and it has been found by experiment that these relations often hold to a degree approaching perfection as far as present methods of measurement can reveal. It must be remembered, however, that the relations do not necessarily hold for all paper samples; for example, they must fail in some degree to apply to a paper not having nearly identical front and back. Furthermore, these relations apply strictly to light of one wave length only. Some deviations are to be expected because of selective scattering even with near-white papers illuminated by daylight though these are usually negligible; and much larger ones with papers having reflectance varying considerably throughout the spectrum because of selective absorption as is the case with chromatically colored papers. Such papers require separate treatment for several regions of the spectrum and appropriate averaging of the results.

It is the purpose of the present paper to make these relations available for practical use. This is done by plotting (Fig. 1) two families of curves on a single set of coordinates, the ordinate being reflectance, R_o, for black backing, and the abscissa being TAPPI opacity, $C_{o.89} = R_o/R_{o.89}$.[2] This plot is similar to the families of curves drawn by Gurevich *(1)* on a reflectance-transmission plot.

The curves of Fig. 1 were drawn through points either computed from the Kubelka-and-Munk formula or through points which were themselves read from curves drawn through computed points. Sufficient accuracy was maintained in the computation, interpolation, and plotting to justify the belief that the errors in reflectance or opacity are less than one-tenth of one per cent.

Application of the Graphs

Each curve of the first family refers to different thicknesses of the same material characterized by its reflectivity, R_∞, or reflectance of a layer sufficiently thick that further increase produces no change; it shows the increase in opacity and in reflectance for black backing as thickness, x, or scattering coefficient, s, is increased. Each curve of the second family refers to layers of constant thickness and scattering coefficient; it shows the increase in opacity produced by decreasing the reflectivity of the material (such as by adding dye) and also the attendant decrease in reflectance for black backing.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 13 to 21, 1935.

[1] Publication approved by the Director of the National Bureau of Standards of the U. S. Department of Commerce.

[1] Colorimetry Section, Bureau of Standards, Washington, D. C.

[2] This is contrast ratio with a white backing of 89 per cent reflectance. For identification of this contrast ratio with TAPPI opacity, see D. B. Judd, *Opacity Standards*, J. Research NBS, 13:281-291, RP709 (1934); also Paper Trade J. 100: No. 1, TS28 (1935). Consult this paper also for complete definitions of the terms used in the present paper.

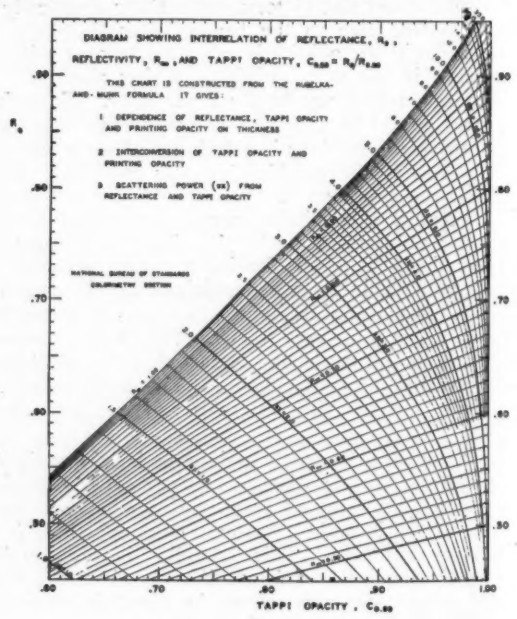
DIAGRAM SHOWING INTERRELATION OF REFLECTANCE, R_o,
REFLECTIVITY, R_∞, AND TAPPI OPACITY, $C_{o.89} = R_o/R_{o.89}$
THIS CHART IS CONSTRUCTED FROM THE KUBELKA-AND-MUNK FORMULA IT GIVES:
1 DEPENDENCE OF REFLECTANCE, TAPPI OPACITY AND PRINTING OPACITY ON THICKNESS
2 INTERCONVERSION OF TAPPI OPACITY AND PRINTING OPACITY
3 SCATTERING POWER (s∞) FROM REFLECTANCE AND TAPPI OPACITY
NATIONAL BUREAU OF STANDARDS COLORIMETRY SECTION
R_o
TAPPI OPACITY, $C_{o.89}$
.60
.70
.80
.90
1.00

FIG. 1

By means of the relations shown graphically the following quantities may be read:

(1) Reflectivity, R_∞, may be read from measured values of reflectance, R_o, for black backing, and TAPPI opacity, $C_{o\cdot89}$. Reflectivity is a fundamental constant of a material; for its direct measurement a large number of layers of paper are frequently required. This graph permits it to be found for a single small sample. For example, a sheet of paper found to have R_o equal to 0.75 and TAPPI opacity equal to 0.91 should have from the graph a reflectivity of 0.80_6. This is found by interpolation between the lines of constant reflectivity identified at 100 per cent opacity where reflectance and reflectivity are identical by definition.

(2) Printing opacity, R_o/R_∞, may also be read by means of the graph from measurement of R_o and TAPPI opacity on a single small sample. The method is to find the reflectivity, R_∞, as described above; then compute the ratio, R_o/R_∞. In the above example the printing opacity would be $0.75/0.806=0.931$.

(3) TAPPI opacity, $R_o/R_{o\cdot89}$, may be read from reflectance, R_o, for black backing and reflectivity, R_∞. This permits TAPPI opacity to be found by a reflectometer even though a white backing of the proper reflectance (0.89) is not at hand. Suppose the reflectance of a single sheet with black backing is found to be 0.70 and the reflectance of a thick pile of the paper is found to be 0.80, the TAPPI opacity is found from the graph to be 0.84_4. This is found by the intersection of the $R_\infty=0.80$ line with the horizontal line, $R_o=0.70$, which occurs at the vertical line, $C_{o\cdot89}=0.84_4$.

(4) Scattering power, sx, may be found from any of the three pairs of measurements which serve to locate a point on the graph; these are (a) R_o and $C_{o\cdot89}$, (b) R_o and printing opacity, R_o/R_∞, and (c) R_o and R_∞. Scattering power is of value because from the contours of constant scattering power may be read the effect of removing dye (increased reflectance and decreased opacity) or the effect of adding dye (decreased reflectance and increased opacity) for sheets of the same thickness (or basis weight), x. In the example given in (1) the scattering power, sx, is 3.9_8. In the example given in (3) the scattering power is 2.8_0. These are found by interpolation between the contours of constant scattering power, sx.

(5) Scattering coefficient, s may be found in a similar way for a sheet of known thickness (or basis weight), x. This is a fundamental constant of the material from which the paper is made; it is not dependent on the thickness of the paper. The scattering coefficient is important because from it can be read by means of the graph the reflectances for black backing and opacities of all possible homogeneous sheets of paper that can be made from the material by choosing various basis weights or by dyeing. For the example given in (1), increasing the basis weight by 25 per cent would give: $sx=1.25\times3.98=4.98$, which corresponds on the graph to $R_o=0.77_1$ and to $C_{o\cdot89}=0.94_3$. Or. by dyeing the thinner sheet to a reflectivity of 0.73, an opacity of 0.94_2 may be obtained and also a reflectance for black backing of 0.70_2.

It may be well in the interest of clarity to point out the differences between this graph and those given with Dr. Steele's more complete discussion.*(2)* The same sort of information is given by both, and both are derived from the same formula, but the form of plotting used here permits all the information to be given on a single plot. Furthermore, Dr. Steel's graphs dealing with contrast ratio refer to a white backing (magnesium carbonate or magnesia block) having a reflectance of 0.98; the present graph refers to the white backing tentatively adopted in defining TAPPI opacity, that is, of reflectance 0.89.

Large scale photostat copies of this graph suitable for practical use are available and may be had by application to the Colorimetry Section, National Bureau of Standards.

Acknowledgements

The author is indebted to F. A. Steele of the New Jersey Zinc Company and to M. N. Davis of the Kimberly-Clark Corporation for acquainting him with the literature of this subject.

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Thwing Instrument Co. Joins TAPPI

The Thwing Instrument Company of Philadelphia, Pa., makers of fine measuring and testing instruments originally organized in 1906 and later incorporated in 1910, is now a member of the Technical Association of the Pulp and Paper Industry.

The business of the company is divided into two departments, one for producing pyrometer equipment measuring and controlling temperatures from minus 420 to plus 5500 degs. F. and the other department for producing paper testing instruments. The business of the company is fairly evenly divided between the production of electrical measuring instruments and physical testing instruments.

Temperature Measuring Instruments

These temperature measuring and controlling instruments are made in three general divisions, namely the electrical resistance thermometers, which measure the lower temperatures from minus 420 to plus 400 degs. F.; the thermoelectric pyrometer which measures temperatures from 200 to 2900 deg. F.; and the radiation pyrometers which are used for the highest temperatures, covering ranges 925 to 5500 degs. F.

This temperature measuring equipment is produced in indicating and recording types, the recording type being both in the daily chart and the continuous chart styles, electrically driven in the majority of cases but for communities where controlled electrical frequencies are not available, they are supplied driven by special heavy duty clocks, built in this laboratory as clocks of this power and precision are not available in the open market.

An especially unique pyrometer is supplied to nonferrous foundries. This is a very rugged although sensitive equipment fitted with magazine reels from which thermocouple wire is fed to the junction as required.

The ideal of this department has not been to strive for

mass production, but rather to render a careful and painstaking personal service in solving unusual and difficult problems of temperature measurement and control. This has brought some very odd problems to its engineers, ranging all the way from supplying temperature measuring devices for diagnosing instruments, criminal detectors, for use on ships all the way from submarines to the mighty express liners Washington and Manhattan, development of colored motion picture films, for delicate chemical processes and the like. Problems have involved the measurement of the heat generated in concrete water dams due to internal pressure, for use in tempering hair-sized capillary tubing, and for measuring the temperature of a cannon's discharge and many others equally difficult.

In addition to the thermoelectric controlling devices, an expansion controller of unique design is used throughout the world wherever copper wire is coated.

A specialty has been made of producing checking and calibrating equipment (The Treasure Chest) for testing and calibrating pyrometer installations in order to keep them up to the highest state of efficiency. In addition to its special functions just mentioned it is also a good general purpose potentiometer of great accuracy.

In this connection the Resistometer may be mentioned as it is a companion instrument to the Treasure Chest. It has all the checking and calibrating features for electric resistance measurements that the Treasure Chest has for thermoelectric work.

The routine day to day work calls for supplying temperature measuring and controlling instruments for all industries. They are shipped to every civilized country in the world. For use especially in paper mills, brick and ceramic industries, glass, steel, cement, lime, chemical, heat treating works as well as in smelting plants, brass and aluminum foundries, oil refineries, ice plants, navy yards, arsenals and diesel engines. Rubber and other contact pyrometer applications such as for paper mill driers.

Paper Testing Instruments

The paper testing division of this company's business needs no introduction to the paper technical men of America. This department has been in existence about twenty years and has been busy producing such standard lines of paper testing instruments as the Elmendorf tearing tester, which has been generally acknowledged for the past fifteen years as the standard tear testing instrument of the world, the initial tearing tester, the Research Tearing Tester, the Thwing basis weight scale for the accurate weighing of paper and the Thwing differential scale, for quick determination of the weight of coating, scale, for quick determination of the weight of coating, moisture, etc., the McLaurin gummed tape tester for determining the adhesive quality of gummed tape, the stiffness, softness and flexibility tester, the automatic white water sampler which is a compact, portable, automatic device which delivers a sample proportionate to the flow, the Penescope for measuring the penetration of liquids and the Vapometer for measuring vapor transmission. The pulp classifier for quick and easy determination of the length of fibers.

The Thwing paper mill pyrometer has been successfully marketed for a number of years being in very general use. It is a very useful instrument where it is desired to get the correct temperatures of drier rolls.

For the past several years, considerable work has been done on a formation tester. Development work on this was completed during the year 1934, and the device is now available for purchase.

The portable pH meter for hydrogen-ion determinations is another instrument which was completed and the instrument put on the market this year. This is an electrical instrument complete in a portable carrying case, sturdy, rugged and accurate, easily manipulated and giving correct results.

Recognizing the importance of photoelectric cells and vacuum tubes, the company has installed equipment and secured the necessary high grade technical staff to keep in the forefront of the development on this type of apparatus in the paper testing industry.

The year 1935 also saw the completion of ten years of development and experimental work on a multiple folding tester of unique design. This was especially developed for those laboratories which have a great number of folding tests to make in a limited time. This involves a new principle which gives an actual fold test rather than merely a sharp bending test.

Among some of the recent developments is the Thwing all-purpose tensile strength tester for paper, textiles, wire, yarn etc., made in all ranges from 12 to 1000 pounds and which, due to its unique principle, permits tests to be made at any speed from 1 to 24 inches per minute. In addition to indicating tensile breaking strength and elongation, this can be fitted with graphic recorders and give stress and strain charts. On special order it can be provided with a controllable rate of leading device. This records the rate of loading and may also be used for applying any predetermined rate of loading. The standard tester can be fitted for making tests of breaking, bending, puncture and pick and ply tests for testing coatings and strength of boards.

For the past three years considerable work has been done by the engineers in developing a dependable, rugged, simple and accurate sampling device for sewage and stream pollution work.

The Razek Mulder color analyzer was placed on the market several years ago, and with the ever increasing recognition of the importance of fundamental color measurement, the popularity and the use of this spectrophotometer will increase.

Research Service for the Paper Industry

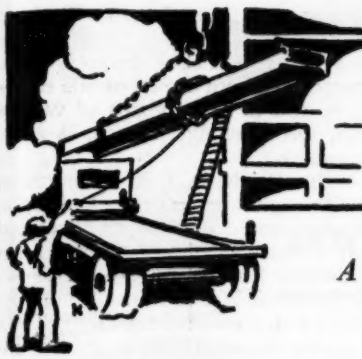
In addition to the standard lines of instruments, this company stands ready at all times to assist in the development of new instruments which appear to fill a need and for which there is a reasonable assurance of a market. The research staff always have a number of new developments under way in various stages of production. Emphasis has been placed on the exploitations of new fields rather than building just another instrument. In addition to that, there is a department devoted to making special instruments to order.

The technical and administrative staff of the paper testing instrument department have all been connected with the company since the formation of that department.

The vast fund of knowledge and the experience gained in working on the great variety of problems submitted to them in that time has made available a tremendous force for low priced and sound development work for anyone building a new instrument.

Instrument making in America is a comparatively young industry but with the wide variety of materials available, splendid reference libraries, technical associations, and fine mechanics, there is no reason why the product of the United States instrument industry should not surpass that of any nation. In line with this belief, the only work that will pass final inspection here is the best that money and greatest skill can produce.

The Thwing Instrument Company will be represented in the Technical Association of the Pulp and Paper Industry by Edward J. Albert, manager.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Middletown, Ohio—The Raymond Bag Company, Tytus street, manufacturer of paper bags and containers, etc., is considering expansion and improvements in plant, including building alterations and installation of additional equipment. It is understood that program will be placed under way in the fall. No estimate of cost has been announced.

New York, N. Y.—The American Alliance Paper Box Company, Inc., recently organized with capital of 200 shares of stock, no par value, plans operation of local plant for the manufacture of paper cartons and containers. New company is represented by Louis Holland, 401 Broadway, New York.

Asheville, N. C.—The Southern Paper Products Company, 745 Biltmore avenue, has arranged for lease of entire building at 20-24 South Spruce street, and will remodel and improve at once for new local storage and distributing plant, including company headquarters. J. L. Widman is president.

Los Angeles, Cal.—The Zellerbach Paper Company, 220 South Los Angeles street, has completed plans and will take bids on general contract at early date for new plant unit at 1200 South Evergreen street. It will be one-story, 182x940 feet, designed primarily for storage and distribution, providing large capacity. Structure is estimated to cost over $200,000, with equipment. Ralph Beebee, 1976 San Pablo avenue, Berkeley, Cal., and Leland S. Rosener, 233 Sansome street, San Francisco, Cal., are engineers. Main offices of company are at 534 Battery street, San Francisco.

Bedford, Va.—The Piedmont Label Company, manufacturer of paper products, has awarded general contract to C. L. Lewis, Allied Arts Building, Lynchburg, Va., for new one-story addition to plant, previously referred to in these columns, and will proceed with superstructure at early date. It will be one-story, totaling about 16,000 square feet of floor space, reported to cost about $45,000, with equipment. Bryan & Terhune, 2 Rector street, New York, N. Y., are engineers.

Philadelphia, Pa.—Thomas M. Royal & Co., Seventh street and Orange avenue, manufacturers of paper products, paper bags, etc., have work under way on extensions and improvements in plant, for which general contract recently was awarded to the Austin Company, Commercial Trust Building, Philadelphia.

New York, N. Y.—The George S. Goerke Company, 34 Hubert street, manufacturer of folding paper boxes and containers, etc., has leased additional space in building at location noted, known as the Varick Realty Building, and will use for expansion.

Wellsburg, W. Va.—The S. George Company, manufacturer of heavy paper bags and containers, has begun construction of new addition to mill, to be one-story, designed primarily for storage and distributing service. A portion of unit will be used for boiler house and present plant removed to that point as soon as structure is ready, with installation of additional equipment. Other improvements in operating facilities will be carried out in connection with new building. No estimate of cost has been announced.

New York, N. Y.—United Corrugated Shipping Supplies, Inc., recently organized with capital of 100 shares of stock, no par value, plans operation of local plant for production of corrugated paper boxes and containers, and other corrugated paper specialties. Incorporators of new company include Morris Schneer and Louis Masheb, 261 Broadway, New York.

Battle Creek, Mich.—The Michigan Carton Company, manufacturer of paper boxes and containers, has completed plans and takes bids at once for new steam power house at plant, including new 50-foot steel stack. Cost reported close to $85,000, including equipment. Shreve, Anderson & Walker, Book Building, Detroit, Mich., are architects.

Newton Upper Falls, Mass.—Gair Boston Containers, Inc., 554 Boston avenue, Boston, Mass., manufacturer of corrugated boxes and containers, a subsidiary of the Robert Gair Company, Inc., 155 East 44th street, New York, plans early removal of plant at Medford, Mass., to Newton Upper Falls, following recent acquisition of the corrugated container division of the Sherman Paper Products Corporation at last noted place. Equipment and facilities will be consolidated at the new location and increased capacity carried out. Company sales office, heretofore at Boston, likewise will be removed to Newton Upper Falls. The Sherman company will continue operations at present location, concentrating on production of corrugated glassine and parchment papers for the food products and allied industries, as well as other paper specialties. Gordon W. Olson is vice-president and general manager of Gair Boston Containers, Inc.

New York, N. Y.—The Paper Bottle and Container Corporation, recently chartered with capital of 200 shares of stock, no par value, plans operation of local plant for manufacture of paper bottles and allied containers, boxes, etc. James H. Halpin, 26 West Ninth street, New York, is principal incorporator.

Bedford, Va.—The Piedmont Label Company, manufacturer of paper specialties, has asked bids on general contract for new one-story addition to plant, recently referred to in these columns. New unit will be one-story, saw-tooth roof type, totaling about 16,000 square feet of floor space. It is reported to cost close to $45,000, including equipment. Bryan & Terhune, 2 Rector street, New York, N. Y., are engineers in charge.

Camden, N. J.—The West Jersey Paper Manufacturing Company, Front and Elm streets, manufacturer of

manila paper specialties, abrasive papers and other paper stocks, is considering early rebuilding of portion of storage and distributing warehouse, recently damaged by fire. Loss reported over $20,000, including equipment.

Dresden, Ohio—The Dresden Paper Mills Company, manufacturer of straw board and allied paper products, has completed plans and will take bids at once for new steam power house at mill, with installation of boiler unit and auxiliary equipment. Cost reported close to $25,000, with equipment. A. M. Kinney, Inc., Carew Tower, Cincinnati, Ohio, is consulting engineer.

New York, N. Y.—The Transparent Products Company, Inc., recently organized with capital of 200 shares of stock, no par value, plans operation of local paper converting plant for production of transparent paper boxes and containers, and allied specialties. New company is represented by L. S. Aldrich, 231 West Forty-fourth street, New York.

Detroit, Mich.—National Automotive Fibres, Inc., 19925 Hoover street, manufacturer of special fiber products, has approved plans for new addition to plant, to be one-story, reported to cost approximately $23,000 with equipment. General contract has been awarded to the O. W. Burke Company, Fisher Building, Detroit, and superstructure will soon be placed under way. Hugh Millar is company architect.

Detroit, Mich.—The Detroit Paper Products Corporation, 5800 Domine street, has work under way on a new one-story addition to plant, totaling about 22,000 square feet floor space, to be used for general production. New unit is expected to be ready for service at early date and is estimated to cost over $35,000, including equipment. S. H. Franklin is president.

Fort William, Ont.—The National Trust Company is asking bids until September 10 for the mill and properties of the Great Lakes Paper Company, Fort William, for which it is receiver. The plant has a rated capacity of about 100,000 tons of unbleached sulphite paper per annum, and has been in receivership for several years. Offers for the purchase of the assets will be presentd to bondholders at a meeting on September 20.

Wesseling, Germany—The Feldmuehle Paper & Zellstoffwerke, A. G. Stettin, Germany manufacturer of pulp and paper products, is making improvements in mill at Wesseling, including installation of new kiln units for abrasive material production. A similar program is being carried out at plant at Lulsdorf. Company has recently resumed operations at mill at Uetersen, Germany, giving employment to large working force.

Rome, Italy—Snia Viscosa, Ltd., Rome, manufacturer of viscose rayon products, is planning expansion in staple fiber department at mill, including installation of new equipment. Project is reported to cost over $100,000, with machinery.

New York, N. Y.—The Ideal Container Corporation has been incorporated with capital of 100 shares of stock, no par value, to manufacture and deal in paper cartons and other containers, paper bags, etc. The incorporators are Jack Frost and Irving D. Neustein, 270 Broadway, New York. Last noted is company representative.

Allen & Co., Chicago paper merchants, have notified their customers and contacts that, effective July 1, the name of the company has been changed to the Allen Paper Company, the change coming about in the interests of simplicity and better description of the business the company transacts.

St. Louis, Mo.—The Libby & Williams Paper Company has been organized with capital of $44,000, to deal in paper products of various kinds. The incorporators include John R. Williams, Robertson, Mo., and John W. Geppert, 5413 Bartmor street, St. Louis.

Worcester, Mass.—The Ideal Paper Supply Company, Inc., has been incorporated with capital of 500 shares of stock, no par value, to deal in paper goods of various kinds. Eugene Friedman, 158 Morningside road, Worcester, is president and treasurer.

Union City, N. J.—The Brisbane Box Corporation has been incorporated with capital of 500 shares of stock, no par value, to manufacture and deal in paper boxes and containers, etc. Company is represented by Abraham Lieberman, 661 Bergenline avenue, Union City, attorney.

Detroit, Mich.—The National Waste Paper Company, Inc., has been incorporated with a nominal capital of $2000, to deal in waste paper goods. Harry Bluestein, 1659 Gladstone avenue, Detroit, is principal incorporator.

New York, N. Y.—The Cellulose Products Corporation has been chartered with capital of 800 shares of stock, of which one-half are preferred, with value of $20,000, and 400 common, no par value, to manufacture and deal in cellulose products. Incorporators include Alexander Rosenbaum, 551 Fifth avenue, New York, company representative.

Fort Worth, Tex.—The Carpenter Paper Company, Inc., has been incorporated with a capital of $100,000, to manufacture and deal in paper products of various kinds. I. W. Carpenter, Jr., and F. B. Walker, Fort Worth, head the new organization.

New York, N. Y.—The Ronald Paper Company, Inc., has been chartered with capital of $20,000, to deal in paper goods of various kinds. The incorporators include Samuel Radom, 879 East Thirteenth street, and Jacob S. Neidorff, 1056 East Seventh street, both Brooklyn, N. Y.

Newark, N. J.—The Wyseman Paper Company, Inc., has been incorporated with capital of 1000 shares of stock, no par value, to deal in paper products of various kinds. Herman Levey, 210 Custer avenue, Newark, is one of the principal incorporators.

Tyler, Tex.—The Tex Paper Company, Inc., has been organized with capital of $20,000, to manufacture and deal in paper products. The incorporators are E. A. Meyers and A. C. Baunig, both of Tyler.

St. Regis Reports Improvements

[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., July 29, 1935—Business conditions are about ten per cent better than a year ago in the opinion of a leading official of the St. Regis Paper Company, who spent the past week in Northern New York conferring with associates. He stated that the trend in the paper industry has been upward because of the increased demand for multi-wall bags and that the governmental projects are improving the tone of general business. Mills of both the St. Regis and Taggart group are operating on about the same level as the past six months, he said. He pointed out that there were no outstanding orders at present but everything was running smoothly with indications of a great improvement over last year. The Oswego Board Mill of the company, which was recently leased to the Johns-Manville Company, is running at capacity. Similar conditions prevail at both the Herrings mill and the Champion plant of the Taggart group while the Deferiet mill of the St. Regis concern is running on the same basis as the past six months. Operations have been suspended temporarily at the Raymondville mill and the business is being concentrated at the Norfolk plant. The Ontario Specialties, another St. Regis branch, is operating about the same as last year while the Taggart branch at Watertown is running at capacity.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING JULY 27, 1935

CIGARETTE PAPER

American Tobacco Co., Champlain, Havre, 100 cs.; Champagne Paper Corp., Champlain, Havre, 291 cs.; Standard Products Corp., Washington, Havre, 4 cs.

WALL PAPER

F. J. Emmerich, Franconia, Liverpool, 2 trusses; W. H. S. Lloyd & Co., Britannic, Southampton, 2 bls., 1 cs.; W. H. S. Lloyd & Co., Berengaria, Southampton, 1 cs.; Thomas & Pierson, Berengaria, Southampton, 2 cs.; ———, Washington, Havre, 9 cs.; ———, Deutschland, Hamburg, 1 cs.; J. E. Bernard & Co., Deutschland, Hamburg, 3 bls.

WALL BOARD

Treetex Corp., Gripsholm, Gothenburg, 2029 bdls.

NEWSPRINT

N. Y. Evening Journal, Herleik, Chicoutimi, 1890 rolls; International Paper Co., Humberarm, Dalhousie, 8418 rolls; American Paper Exports, Inc., Humberarm, Dalhousie, 269 rolls; Perkins Goodwin & Co., Washington, Hamburg, 347 rolls; Gilman Paper Co., Washington, Hamburg, 123 rolls; ———, Washington, Hamburg, 69 rolls; Jay Madden Corp., Washington, Hamburg, 206 rolls.

PRINTING PAPER

Burroughs Wellcome & Co., Franconia, Liverpool, 3 bls.; J. H. & G. B. Siebold, Inc., Deutschland, Hamburg, 19 cs.

PACKING PAPER

C. Happel, Edam, Rotterdam, 5 cs.; F. C. Strype, Bremen, Bremen, 1 ble.

WRAPPING PAPER

Guaranty Trust Co., Gripsholm, Gothenburg, 945 rolls, 155 bls.; Keller Dorian Paper Co., Excambion, Marseilles, 5 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., Britannic, Southampton, 6 cs.; A. Giese & Son, Edam, Rotterdam, 50 bls.; Mager Bros., Deutschland, Hamburg, 75 bls.

FILTER COMPOUND

Gerhard & Hey, Edam, Rotterdam, 15 pkgs.

SURFACE COATED PAPER

C. Happel, Washington, Hamburg, 27 cs.; L. A. Consmiller, Deutschland, Hamburg, 13 cs.

PHOTO PAPER

J. J. Gavin, Berengaria, Southampton, 6 cs.

BASIC PAPER

Globe Shipping Co., Bremen, Bremen, 4 cs.

TRANSFER PICTURES

Rohner Gehrig & Co., Bremen, Bremen, 9 cs.

DECALCOMANIAS

Sellers Transportation Co., Bremen, Bremen, 6 cs.; Sellers Transportation Co., Deutschland, Hamburg, 18 cs.

TISSUE PAPER

Standard Products Corp., Washington, Havre, 12 cs.

TRACING PAPER

International F'd'g Co., J. Jadot, Antwerp, 9 cs.

COLORED PAPER

Model Wallpaper & Paint Co., Black Falcon, Antwerp, 3 cs.

STENCIL PAPER

W. J. Byrnes, American Banker, London, 1 cs.

WRITING PAPER

American Express Co., Washington, Havre, 1 cs.

CARBON PAPER

Japan Cotton & Silk Trading Co., Shinko Maru, Kobe, 1 cs.

PASTE BOARD

R. Reiner, Inc., Deutschland, Hamburg, 6 cs.

PAPER TUBES

———, Bremen, Bremen, 14 cs., 5 ctns.

CARD BOARD

American Express Co., Washington, Hamburg, 105 cs.

MISCELLANEOUS PAPER

Coty Processing Co., Champlain, Havre, 1 cs.; Lunham & Reeve, Inc., Gripsholm, Gothenburg, 30 bls.; Steiner Paper Corp., Gripsholm, Gothenburg, 7 cs.; S. S. Kresge Co., Schodack, Havre, 3 cs.; ———, J. Jadot, Antwerp, 5 cs.

RAGS, BAGGINGS, ETC.

Castle & Overton, Inc., Black Falcon, Antwerp, 10 bls. rags; E. J. Keller Co., Inc., Black Falcon, ———, 37 bls. bagging; E. J. Keller Co., Inc., Black Falcon, ———, 7 bls. rags; Leigh Textile Co., Black Falcon, Antwerp, 85 bls. cotton waste; N. Schwab & Son, Black Falcon, Antwerp, 45 bls. cotton waste; Royal Manfg. Co., Black Falcon, Antwerp, 61 bls. cotton waste; ———, American Banker, London, 7 bls. bagging; Darmstadt Scott & Courtney, Black Osprey, Rotterdam, 9 bls. bagging; E. J. Keller Co., Inc., Black Osprey, ———, 218 bls. rags; Darmstadt Scott & Courtney, Edam, Rotterdam, 9 bls. bagging; E. A. Stone Co., Inc., Edam, Rotterdam, 12 bls. old cloth; Corn Exchange Bank Trust Co., Edam, Rotterdam, 21 bls. old cloth; ———, Edam, Rotterdam, 60 bls. rags; E. J. Keller Co., Inc., Schodack, ———, 49 bls. paper stock; Van Oppen & Co., Schodack, Havre, 226 bls. bagging; Castle & Overton, Inc., Schodack, Havre, 37 bls. rags; Philadelphia Natl. Bank, Shinko Maru, Shanghai, 250 bls. cotton waste; New England Waste Co., Shinko Maru, Shanghai, 75 bls. cotton waste; J. J. Ryan & Son, Inc., Shinko Maru, Kobe, 75 bls. cotton waste; O. Smith & Sons, Shinko Maru, Shanghai, 50 bls. cotton waste; Castle & Overton, Inc.,

Winona County, Dundee, 225 bls. paper stock; Leigh Textile Co., Winona County, Manchester, 50 bls. cotton waste; ———, Winona County, Manchester, 45 bls. cotton waste; Bond Bros. & Co., Kano Maru, Kobe, 100 bls. cotton waste; Royal Manfg. Co., J. Jadot, Antwerp, 92 bls. cotton waste.

GLUE STOCK, ETC.

———, Deutschland, Hamburg, 200 bags bone glue; ———, Deutschland, Hamburg, 200 bags, hide glue; National Adhesives Co., Deutschland, Hamburg, 120 bags topas glue.

OLD ROPE

Chase National Bank, American Banker, London, 42 coils; E. J. Keller Co., Inc., American Banker, ———, 97 coils.

CASEIN

———, Western World, B. Ayres, 50 bags.

WOOD PULP

M. Sone, Washington, Hamburg, 330 bls. wood pulp, 50 tons; Perkins Goodwin Co., Gripsholm, Gothenburg, 140 bls. sulphate; Perkins Goodwin Co., Grispholm, Gothenburg, 26 bls. sulphite; M. Sone, Gripsholm, Gothenburg, 406 bls. wood pulp; Gottesman & Co., Inc., Gripsholm, Gothenburg, 1800 bls. sulphate; Gottesman & Co., Inc., Gripsholm, Gothenburg, 375 bls. chemical pulp; Castle & Overton, Inc., Deutschland, Hamburg, 1120 bls. wood pulp, 224 tons; Bulkley Dunton & Co., Ditmar Koel, ———, 1425 bls. wood pulp.

WOOD PULP BOARDS

H. Fuchs & Son, Gripsholm, Gothenburg, 47 crates.

NEWARK IMPORTS

WEEK ENDING JULY 27, 1935

H. G. Craig Co., Donpaco, Donnacona, 306 rolls newsprint.

ALBANY IMPORTS

WEEK ENDING JULY 27, 1935

Perkins Goodwin Co., Brosund, Sundsvall, 2100 bls. sulphite, 350 tons; Pagel Horton & Co., Inc., Brosund, Gefle, 500 bls. sulphate, 101 tons; Pagel Horton & Co., Inc., Brosund, Gefle, 4000 bls. sulphite, 583 tons; Tradesman's Natl. Bank Trust Co., Brosund, Gefle, 250 bls. sulphate, 57 tons; ———, Brosund, Gefle, 2250 bls. sulphite, 457 tons; Price & Pierce, Ltd., Brosund, Orviken, 1500 bls. chemical pulp, 250 tons; Gottesman & Co., Inc., Brosund, Iggesund, 750 bls. sulphite, 150 tons.

PORTLAND IMPORTS

WEEK ENDING JULY 27, 1935

The Borregaard Co., Inc., Hjelmaren, Gothenburg, 2000 bls. dry pulp; The Borregaard Co., Inc., Hjelmaren, Gothenburg, 300 bls. chemical pulp; Waterfalls Paper Mills, Hjelmaren, Gothenburg, 2000 bls. sulphite; Perkins Goodwin Co., Hjelmaren, Gothenburg, 352 bls. sulphate; Lagerloef Trading Co., Hjelmaren, Viipuri, 2958 bls. sulphate; Lagerloef Trading Co., Hjelmaren, Kotka, 1363 bls. sulphite; Gottesman & Co., Inc., America, Sweden, 3500 bls. wood pulp; Gottesman & Co., Inc., Vigor, Sweden, 7500 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING JULY 27, 1935

Irving Trust Co., Black Falcon, Antwerp, 54 bls. bagging; International Purchasing Co., Black Falcon, Antwerp, 62 bls. old rope; Royal Manfg. Co., Black Falcon, Antwerp; 85 bls. cotton waste; Irving Trust Co., Black Falcon, Antwerp; 61 bls. bagging; ———, Black Falcon, Antwerp, 30 bls. rags; L. Henkels Co., Black Falcon, Antwerp, 34 bls. rags; American Express Co., Black Falcon, Antwerp, 128 rolls wrapping paper; ———, Black Falcon, Antwerp, 46 rolls packing paper; Chase National Bank, Black Falcon, Antwerp, 85 bls. rags; Price & Pierce, Ltd., Hjelmaren, Gothenburg, 500 bls. dry pulp; Gottesman & Co., Inc., Hjelmaren, Gothenburg, 450 bls. chemical pulp; Perkins Goodwin Co., Hjelmaren, Gothenburg, 140 bls. sulphate; J. Andersen & Co., Hjelmaren, Gothenburg, 1875 bls. sulphate; J. L. Hammett & Co., Hjelmaren, Gothenburg, 116 rolls newsprint; Atterbury Bros., Inc., Hjelmaren, Hango, 1050 bls. wood pulp; Castle & Overton, Inc., Hjelmaren, Viipuri, 3826 bls. wood pulp; Lagerloef Trading Co., Hjelmaren, Kotka, 857 bls. sulphite; Lagerloef Trading Co., Hjelmaren, Kotka, 324 bls. sulphate; Stone & Downer Co., Hjelmaren, Kotka, 115 rolls newsprint; Lagerloef Trading Co., Hjelmaren, Kotka, 745 bls. wood pulp; American & British Chemical Supplies, West Selene, B. Ayres, 417 bags casein, 55163 lbs.; Elliott Addressing Machine Co., Shinko Maru, Yokohama, 8 cs. paper; Gottesman & Co., Inc., Frankfurt, Czecho-Slovakia, 1290 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JULY 27, 1935

Philadelphia Natl. Bank, Shinko Maru, Kobe, 100 bls. cotton waste; 1st Natl. Bank of Philadelphia, Shinko Maru, Kobe, 100 bls. cotton waste; National Waste Co., Shinko Maru, Kobe, 50 bls. rags; American Cotton Products Co., Shinko Maru, Kobe, 50 bls. cotton waste; M. Sone, Topeka, Gothenburg, 1445 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING JULY 27, 1935

Perkins Goodwin Co., Brosund, Sundsvall, 900 bls. sulphate, 150 tons; Pagel Horton & Co., Inc., Brosund, Sikea, 3000 bls. sulphite, 508 tons; ———, Brosund, Iggesund, 2700 bls. chemical pulp, 540 tons; ———, Brosund, Iggesund, 500 bls. sulphate, 100 tons; ———, Brosund, Iggesund, 125 bls. sulphite, 25 tons; Gottesman & Co., Inc., Brosund, Iggesund, 2750 bls. sulphite, 550 tons; Congoleum Nairn Co., Schodack, Havre, 192 bls. rags; ———, Winona County, Leith, 133 bls. waste paper; Sherman Bros., Kano Maru, Kobe, 144 bls. rags; Bulkley Dunton & Co., Britte Marie, ———, 5125 bls. wood pulp; Bulkley Dunton & Co., Carplaka, ———, 375 bls. wood pulp; M. Sone, City of Newport News, Hamburg, 600 bls. wood pulp; Gottesman & Co., Inc., Innaren, Sweden, 1750 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING JULY 27, 1935

N. Y. Trust Co., Black Osprey, Rotterdam, 258 bls. wood pulp, 55 tons; Bulkley Dunton & Co., Boschdyk, ———, 259 bls. wood pulp; Gottesman & Co., Inc., Innaren, Sweden, 500 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING JULY 27, 1935

National City Bank, Schodack, Havre, 321 bls. bagging.

MONTREAL IMPORTS

WEEK ENDING JULY 27, 1935

Gottesman & Co., Inc., Chemnitz, Czecho-Slovakia, 3229 bls. wood pulp; Gottesman & Co., Inc., Braheholm, Sweden, 2400 bls. wood pulp.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, July 31, 1935.

Despite the midsummer season there is still some life in the local paper market. Demand for the various standard grades is more persistent than at this period last year. Sales forces of the leading paper organizations continue to express optimism. Prices are holding to formerly quoted levels.

The position of the newsprint paper market is practically unchanged. Manufacturing operations in the United States, Canada and Newfoundland are being maintained in sufficient volume to take care of current requirements. Stocks at the mills are about normal. The price situation is unsatisfactory.

Steadiness prevails in the fine paper market. Demand for book, cover, writing and ledger papers is fairly active. Prices are generally holding to schedule. Tissues continue to go forward in good volume. The coarse paper market is firm and summer specialties are moving freely. As usual at this time of the year paper board mill activities are restricted.

Mechanical Pulp

The ground wood pulp market is rather quiet. Production in North America and abroad is keyed to consumption as far as possible and the statistical position of the industry is considered fairly sound. Accumulations at the pulp mills are not excessive. Quotations on domestic and imported mechanical pulp are easy.

Chemical Pulp

Demand for the various grades of foreign and domestic chemical pulp is well sustained. The volume of business transacted of late exceeds the record for the corresponding period of the preceding year. The strength of kraft pulp is the particular feature of the market. Bleached sulphite pulp continues firm.

Old Rope and Bagging

The old rope market is listless. Demand for domestics and foreign old manila rope is light. Small mixed rope is dull. Old rope quotations, however, are fairly steady. The bagging market is steady. Offerings of gunny bagging are limited. Scrap bagging is strong, while roofing bagging is seasonally active.

Rags

Sentiment in the domestic rag market is improving. The better grades of old cotton rags are attracting more interest. New cotton rags are steady, especially No. 1 white shirt cuttings, which continue in export request. Roofing grades are firmer. Some improvement transpired in the imported rag market, although prices are nominal.

Waste Paper

The paper stock market is exhibiting a stronger undertone. Board mill interest in the lower grades is more in evidence. Quotations on strictly folded news and No. 1 mixed paper are steadier. The higher grades of waste paper are holding up well for the time of year and prices are generally well maintained.

Twine

Trading in the local twine market is moderately active. Demand for the various varieties is somewhat restricted, although close observers of the market anticipate a revival of activity in the near future. Business should expand materially after the Labor Day holiday. No radical price changes have taken place.

Blake, Moffitt & Towne Open Stockton Div.

O. W. Mielke, general manager of Blake, Moffitt & Towne announces that the company will establish a Division at Stockton, which will be open and ready for business on August first. "We have leased a building at 400 West Market street, at the corner of Van Buren," says Mr. Mielke "and work is now in progress fitting it up to serve as the modern and efficient paper warehouse office we will require adequately to serve the paper buyers of Stockton and vicinity. We are also pleased to announce the appointment of Lowell M. Heath as manager of our new Stockton Division. Mr. Heath has for several years been our resident salesman in Stockton and with his wide acquaintance throughout the trade and his valuable experience in the paper business, we know he will be able more effectively to serve the requirements of our friends and customers through the facilities of the Stockton house. A prompt and efficient truck delivery system will be instituted to serve the trade within the city limits and in addition the counties of San Joaquin, Stanislaus, Tuolumne, Calaveras and Amador will be included in the territory covered from this point."

Blake, Moffitt & Towne is one of the largest paper organizations in the country as well as being the oldest in the business on the Coast, having been founded in San Francisco in 1885 and is consequently this year celebrating its 80th Anniversary. The company handles a complete line of papers of all kinds; printing, wrapping, bags, paper products, twines and cordage, and represents as exclusive distributors many of the best known brands manufactured by nationally recognized mills.

In addition to the new division at Stockton and the parent house at San Francisco, Blake, Moffitt & Towne operate divisions located at Los Angeles, Seattle, Portland, Tacoma, Oakland, Fresno, Sacramento, San Diego, San Jose, Phoenix, Tucson, Boise and Salem.

Alfred T. Carter Recovering

Alfred T. Carter, New England Sales Manager for the Pejepscot Paper Company, underwent an operation recently at the Harley Hospital, Dorchester, Mass. The latest reports are that he is improving satisfactorily, and will undoubtedly return to his office in another month.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, July 31, 1935.

BLANC FIXE.—Conditions in the blanc fixe market are fairly satisfactory. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The bleaching powder market is only moderately active. Contract shipments are moving slowly. Prices are holding to previously quoted levels. Bleaching powder is quoted at from $1.90 to $2.15 per 100 pounds, in drums, at works.

CASEIN.—The casein market is dull. Domestic standard ground is quoted at 10½ and finely ground at 11; French standard ground at 12¾ and finely ground at 13¼; Argentine standard ground at 13 and finely ground at 13½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda is fairly active. The contract movement is average for the season. Solid caustic soda is quoted at from $2.60 to $3.10; while the flake and ground are selling at from $3 to $3.05 per 100 pounds, in drums, at works.

CHINA CLAY.—The position of the china clay market is practically unchanged. Prices are holding to schedule. Imported china clay is still quoted at from $13.50 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at mine.

CHLORINE.—Steadiness prevails in the chlorine market. Demand from the paper mills is brisk. Quotations are holding to previously quoted levels. Chlorine is quoted at from $2 to $2.40 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over at works.

ROSIN.—The rosin market is marking time. Paper making gum rosin is quoted at $4.30 and wood rosin at $4.20 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.50 per 100 pounds, in tank cars, at works.

SALT CAKE.—Paper mill demand for salt cake is fairly persistent. Prices remain unchanged. Salt cake is quoted at from $12 to $13, and chrome salt cake at from $11 to $12 per ton, at works. Imported salt cake is selling at from $12 to $13 per ton, on dock.

SODA ASH.—The soda ash market is exhibiting a strong undertone. Supplies are moving into consumption in good volume. Prices are steady. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—Most of the business transacted in the starch market during the past week was along routine lines. Prices remain unchanged. Special paper making starch is quoted at $3.59 per 100 pounds, in bags; and at $3.86 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Contract shipments of sulphate of alumina are moving freely. Prices continue firm and unchanged. Commercial grades are quoted at from $1.35 to $1.50; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Trading in the talc market is fairly active for the time of year. Prices continue steady and unchanged. Domestic talc is quoted at from $16 to $18 per ton, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.35	@	5.75
S. & S. C. Litho.	5.60	@	6.00
M. F.	5.10	@	5.50
Coated and Enamel	5.90	@	6.55
Coated Litho	5.90	@	6.55
Tissues—Per Ream—			
White No. 1	.82½	@	.85
White No. 2	.67½	@	—
Anti-Tarnish M. G. only	1.00	@	—
Colored	.85	@	—
Kraft	.70	@	—
Manila	.67½	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	4.00	@	4.50
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.50	@	3.50
Glassine—			
Bleached	.11	@	—
Unbleached	.09	@	—

(The following Quotations are Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Kraft—			
No. 1 Northern	4.12½	@	4.75
Standard	4.00	@	—
Southern	3.87½	@	—
Boards—per ton—			
News	32.50	@	35.00
Chip	32.50	@	35.00
Sgl. Mla. Ll. Chip	45.00	@	47.50
Jute Lined Chip	45.00	@	47.50
White Patent Coated	55.00	@	57.50
Binders Boards	67.00	@	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	21.00	@	22.00
Dry	21.00	@	22.00

(F. o. b. Mill)

No. 1 Domestic and Canadian	18.00	@	24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Division 1	2.60	@	—*
Division 2	2.55	@	—*
Division 3	2.50	@	—*
Prime Qualities—			
Class 1. All Prime Easy Bleaching	2.05	@	—*
Other Than Easy Bleaching—			
Class 2. Higher than Standard	2.00	@	—*
Class 3, Standard	1.95	@	—*
Class 4, Lower than Standard	1.90	@	—*

(On Dock, Atlantic Ports)

Kraft No. 1	1.70	@	1.80
Kraft No. 2	1.50	@	1.60

(F. o. b. Pulp Mill)

Kraft Domestic	1.70	@	2.35

(Delivered)

Soda Bleached	2.50	@	—

* Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	5.75	@	6.00
Silesias No. 1	3.75	@	4.00
New Unbleached	6.25	@	6.50
New Soft Blacks	3.00	@	3.25
Blue Overall	3.50	@	3.75
Fancy	2.50	@	2.75
Washables	1.75	@	2.00
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.50	@	1.75
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.25	@	1.50
Black Stockings	2.50	@	3.00
Roofing Rags—			
No. 1	1.35	@	1.40
No. 2	1.15	@	1.20
No. 3	.95	@	1.00
No. 4	.95	@	1.00
No. 5A	.80	@	.85

Foreign Rags

New Rags

New Dark Cuttings	1.75	@	1.85
New Mixed Cuttings	1.80	@	1.90
New Light Silesias	3.75	@	4.00
Light Flannelettes	3.75	@	4.00
Unbleached Cuttings	6.50	@	6.75
New White Cuttings	6.50	@	6.75
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.75	@	1.85
French Blue Linens	2.30	@	2.40
German Blue Linens	2.15	@	2.25
German Blue Cottons	1.70	@	1.80
Checks and Blues	1.30	@	1.40
Linsey Garments	1.80	@	1.90
Dark Cottons	1.30	@	1.40
Old Shopperies	1.00	@	1.05
New Shopperies	.95	@	1.05
French Blues	1.70	@	1.80

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.60	@	1.70
Domestic	1.45	@	1.55
Wool Tares, light	1.65	@	1.70
Wool Tares, heavy	1.75	@	1.80
Bright Bagging	1.65	@	1.70
Manila Rope—			
Foreign	1.85	@	2.00
Domestic	1.75	@	2.00
Small Mixed Rope	1.10	@	1.35
New Burlap Cut	2.00	@	2.25
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.45	@	2.55
Ordinary Hard White No. 1	2.10	@	2.15
Hard White No. 2	1.90	@	2.00
Soft White No. 1	1.70	@	1.80
Flat Stock—			
Stitchless	.65	@	.75
Over issue Mag.	.65	@	.75
Solid Flat Book	.45	@	.50
Crumpled No. 1	.35	@	.40
Solid Book Ledger	1.50	@	1.65
Ledger Stock	1.00	@	1.10
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.70	@	1.80
New Cuttings	1.35	@	1.45
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.10	@	1.20
News—			
No. 1 White News	1.20	@	1.30
Strictly Overissue	.60	@	.65
Strictly Folded	.22	@	.25
No. 1 Mixed Paper	.22	@	.25

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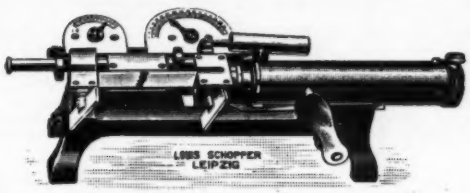

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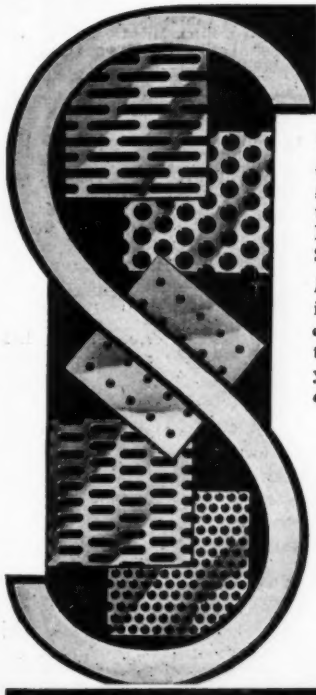

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(F. o. b. Mill)

Coarse Polished—			
India	.11¼	@	.13¼
Belg. White Hemp	.12¼	@	.15¼
India Compress	.11¼	@	.12¼
Fine Polished—			
Fine India	.19	@	.21

Special	.17	@	.19
B. C.	.25½	@	.27½
Unpolished—			
Box	.10	@	.10½
Paper Makers	.07	@	.12
Tube Rope	.08	@	.13½
Wall Paper	.09	@	.12½
Wrapping	.13	@	.18
Special	.13	@	—
Soft Fiber Rope	.10¼	@	.10¼

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.12	@	.50
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.11
Superfine Writing	.18	@	.24
No. 1 M. F. Boo	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.05¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	41.00	@	—
Sheets, open	46.00	@	48.50
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.20	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.30	@	.35
No. 1 Mixed Paper	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(Delivered Philadelphia)

Bonds	.05-9/10	@	.38
Ledgers	.06-9/10	@	.40
Writings—			
Fine No. 3	.05	@	.06
Superfine	.10	@	.12
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Book, M. F.	.05¼	@	.06¼
Book, S. S. & C.	.05½	@	.07½
Book, Coated	.06½	@	.09
Coated Lithograph	.06¾	@	.08½
Label	.07	@	.11
No. 1 Jute Manila	6.25	@	—
Manila Sul., No. 1	5.25	@	—
Manila No. 2	3.75	@	—
No. 1 Kraft	5.00	@	—
Southern Kraft	4.75	@	—
Common Bogus	.03	@	—
News Print Rolls	40.00	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.40	@	1.75
Best Tarred, 3 ply	2.00	@	2.25

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01½	@	.02
Blue Overall	.03½	@	.04
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.01½	@	.03
Fancy	.01½	@	.03
New Black Soft	.02	@	.04
New Light Seconds	.01½	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O. D.	.03	@	.04
No. 2 Mixed	.03	@	.04
Corduroy	.02	@	.03
New Canvas	.03½	@	.04½
New Black Mixed	.02½	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.50
Miscellaneous	1.75	@	2.25
M. G.	3.00	@	3.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.50
Repacked	1.50	@	2.00
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.85

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	1.75
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White	1.80	@	1.85
No. 2 Soft White	1.25	@	1.30
No. 1 Mixed	—	@	.75
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.00	@	1.10
No. 1 Books, heavy	.55	@	.60
No. 1 New Manila	1.35	@	1.40
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.00	@	—
No. 1 Mixed Paper	.23	@	.25½
Straw Board Chip	.20	@	—
Binders Board Chip	.20	@	—
Corrugated Board	.40	@	—
Overissue News	.50	@	—
Old Newspapers	.30	@	—

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.07¼	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¾	@	.05
No. 2 Kraft	.04½	@	.04¾

(F. o. b. Boston)

Southern Kraft	.03¾	@	.04½

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots)

Common Bogus	.02	@	.02¼

(Delivered New England points)

News Print Rolls	39.50	@	—
Straw Board, rolls	.009	—	@35.00
Straw Board in Sheets, basis 35s to 70s	—		@40.00
Filled News Board	40.00		@45.00
Chip Board	37.50		@40.00
Chip Board (Creasing)	37.50		@40.00
Single Manila Lined Chip	47.50		@52.50
Single White, Patent Coated News Board (Bender)	55.00		@65.00
Wood Pulp Board	70.00		@75.00
Binder Boards (Standard Grade)	67.00		@75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.00	@	2.20
No. 1 Soft White	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.30	@	1.40
No. 1 Old Manila	.60	@	.65
White Blank News	1.15	@	1.20
No. 1 Kraft	.90	@	1.00
Mixed Papers	.22½	@	.25
Print Manila	.40	@	.45
Container Manilas	.27½	@	—
Overissue News	—	@	.35
Old Newspapers	.25	@	.27½
Box Board Chips	—	@	.25
Corrugated Boxes	.32½	@	.37½
Screening Wrappers	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	1.80	@	1.90
Domestic	1.50	@	1.75
Transmission Rope	.90	@	1.00
Jute Rope	1.50	@	1.60
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.85	@	—
Domestic	1.35	@	—
Bleachery Burlap	4.00	@	4.50
Scrap Burlap—			
Foreign	1.75	@	1.85
Domestic	1.30	@	1.35
Scrap Sisal	1.05	@	1.15
Scrap Sisal for Shredding	1.20	@	1.35
Wool Tares, heavy	1.50	@	1.60
New Burlap Cuttings	1.60	@	1.75
Australian Wool Pouches	2.50	@	2.75
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging	1.10	@	1.25
Bagging No. 2	.70	@	.75

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.01¾	@	.02
New White No. 1	.05½	@	.06
New White No. 2	.03½	@	.04
Silesias No. 1	.04¼	@	—
New Black Silesias	.02½	@	.03
Soft Unbleached	.05¾	@	.06½
Blue Cheviot	—	@	4.65
Fancy	.0195	@	.021
Washable	.0165	@	.0170
Cottons—According to grades—			
Blue Overalls	.04	@	—
New Black, soft	.04	@	.04¼
Khaki Cuttings	.03½	@	.03¾
O. D. Khaki	.03	@	.03¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¾
Paper Mill Bagging	1.10	@	1.25

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.25	@	1.50
Thirds and Blues—			
Repacked	2.00	@	2.75
Miscellaneous	2.00	@	2.25
Black Stockings	2.50	@	3.00
Roofing Stock—			
No. 1	1.20	@	1.25
No. 2	.95	@	1.00
No. 3	.90	@	—

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.35	@	1.45
New White Shirt Cuttings	5.50	@	6.00
Dutch Blues	2.00	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.75	@	—
Old Linsey Garments	1.90	@	—

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.11	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.12	@	—
No. 2 Colored	.09	@	—
Ledgers (sulphite)—			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.02½
Book—			
No. 1 M. F. (Carloads)	6.50	@	—
No. 2 M. F. (Carloads)	6.00	@	—
No. 3 M. F. (Carloads)	5.00	@	—
No. 1 S. C. (Carloads)	7.00	@	—
No. 2 S. C. (Carloads)	6.50	@	—
No. 3 S. C. (Carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	5.25	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft, No. 2	5.40	@	—

(F. o. b. Cars Toronto)

News, per ton—			
Rolls (contract)	39.50	@	—
Sheets	42.00	@	—

Pulp

(F. o. b. Mill)

Ground wood	27.00	@	—
Unbleached Sulphite	42.00	@	—
Book (Class 1)	58.00	@	—
Writing (Class 2)	59.00	@	—
Select (Class 3)	60.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

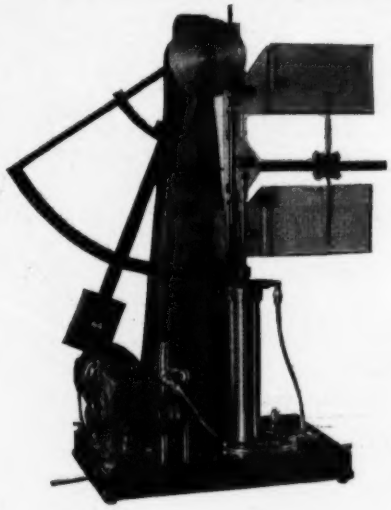
Shavings—			
White Env. Cut	2.00	@	2.30
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.40
Printed Manilas	.50	@	.60
Kraft	1.00	@	1.60
News and Scrap—			
Strictly Overissue	.60	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06	@	—
Fancy Shirt Cuttings	.02	@	—

Thwing All Purpose Tensile Tester



The Thwing All-Purpose Tensile Tester is used for making a variety of tests on paper, textiles tape, rubber and fine wire. A few of the more generally used tests are, Tensile, Elongation, Bending, Compression, Puncture, Pick Coating and Ply. For each of these tests special attachments are furnished.

This Tensile Tester has an electro-hydraulic drive which gives perfect control of speed while testing. The variable speed range is from one inch to 24 inches per minute.

Tensile and Elongation tests are made simultaneously. Test samples are 15mm wide and range from 10mm to 180mm in length.

The Thwing All-Purpose Tensile Tester can be furnished with or without the graphic recorders to record the Load-Stretch Diagram and Power-Time rate of loading diagram. The illustration shows this Tensile Tester with these graphic recorders.

Write for quotation.

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PAPER TRADE JOURNAL

ESTABLISHED 1872

SIXTY-FOURTH YEAR

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

Published Every Thursday by the LOCKWOOD TRADE JOURNAL CO., Inc.

GEO. S. MACDONALD, President. J. BANNINGA, Sec.-Treas.

Published at 34 No. Crystal St., East Stroudsburg, Pa.
Executive and Editorial Offices: 15 West 47th Street, New York
Chicago Office: 123 West Madison St.

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